

ALDER HEY LIVERPOOL

PHASE 2 GEO-ENVIRONMENTAL INVESTIGATION REPORT

Job Number: LKC 22 1332
Date: 22nd June 2023
Client: Laidrah Ltd



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LK Consult			
Document Verification			
Site Address	Alder Road, Liverpool, L12 2AZ		
Report Title	Phase 2 Geo-Environmental Investigation Report		
Job Number	LKC 22 1332	Document Ref.	CL-602-LKC 22 1332-02
Date Issued	22 nd June 2023	Report Version	R1
Prepared By	Rachel Wylie Colin Wardle	Reviewed By	Colin Crompton

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EXECUTIVE SUMMARY

Site Details

Site Location:	South of Alder Road, Eaton Road is to the east of site, Liverpool, L12 2AZ. Centred at approximate National Grid Reference 340292E 391907N.
Site Area:	Study Area: 1.51Ha. Wider Site Area: 2.07Ha.
Current Land Use:	Rough ground with stockpile in the northeast of site, a road intersects the middle of site from the northwest to the east.
Proposed Development:	Six plots (Plots 3-8) which include low rise residential properties (Plots 3, 5, 6 and 7), specialist autism unit comprising 2-storey studio apartments (plot 4); and over-55's apartment block 4-5 storeys).
Purpose of Report:	Contamination and Geotechnical Assessment.

Previous Work

Report Details	Undertaken by Obsidian Environmental Ltd in May 2018.
Main Historical Features	Onsite: agricultural land and small buildings prior to US Regimental Hospital constructed between 1918-1920. Annotated as Alder Hey Hospital from 1927. Recreational facilities, extension of buildings and provision of car parking undertaken onsite and wider hospital site since that time. Surrounding Area: railway line adjacent southeast.
Geology / Hydrogeology	Superficial: Glacial Till. Secondary Undifferentiated Aquifer. Bedrock: Chester Pebble Beds (sandstone). Principal Aquifer.
Landfills / Infilled ground	No recorded landfills.
Site Investigation	The report undertaken by Obsidian Environmental Ltd also included a summary of a pre demolition site investigation undertaken by ESG in 2015 on the wider site area. The ground conditions comprised up to 0.5m of made ground underlain by Glacial Till. Sandstone bedrock was encountered at between 1.7m to 8.7m below ground level. Made ground encountered during the Obsidian Environmental Ltd investigation was recorded to a maximum of 2.4mbgl associated with former foundations and subsequent backfill. Soil samples tested from the study site area did not identify any elevated concentrations of contaminants. One gas monitoring visit did not identify any elevated gas concentrations.
Conceptual Model	PL1 Direct Contact (Human Health): Low Risk (ACM, metals, PAHs, Petroleum Hydrocarbons). PL2 Inhalation of Vapours: Low Risk (volatile contaminants). PL3 Gas: Low Risk (hazardous and ground gas). PL4 Controlled waters: Low Risk (mobile contaminants). PL5 Water Pipelines: Low Risk (organic contaminants).

Ground Investigation Work Undertaken

Date of Investigation:	25 th July to 5 th August 2022
Intrusive Investigation Work Undertaken:	8no. cable percussive boreholes with follow on / adjacent rotary coring (B1-B8). 3no. mechanically excavated slit trenches (ST1-ST3). 5no. window sample boreholes (W1-W5).
Monitoring Wells:	Installed in all cable and rotary boreholes (B1-B8).
Soil Sampling:	9no. samples tested for metals, speciated PAHs, pH, sulphate, asbestos and SOM. 3no. samples tested for metals, speciated PAHs, cyanide, pH, sulphate, asbestos, phenol, TPHCWG, BTEX, MTBE and SOM. 4no. samples tested for pH and sulphate.

Monitoring:	1no. groundwater monitoring visit.
Insitu and Laboratory Geotechnical Testing:	SPTs, shear vanes, plasticity, triaxial, unconfined compressive strength.
Other Work:	Lightweight deflectometer tests.

Ground Conditions and Assessment

General Ground Conditions	Made Ground to between 0.4m and 2.8mbgl. Firm to stiff, becoming very stiff, variably sandy Gravelly CLAY to depths of between 4.00m in the central area of the site and 8.5mbgl at the eastern boundary of the site. Sandstone at 4.00mbgl in the centre of the site, dipping to the east to 8.5mbgl at the eastern boundary. Isolated perched groundwater at 1-1.3m in ST2 and 7.7-8.0mbgl within B7 & B8 respectively.
Allowable Bearing Capacity	Based on the s_u of 40kPa at 1mbgl and 60kPa at 2mbgl within the natural Glacial Till. ABCs of strip foundations of 82kN/m ² and 123kN/m ² at 1m and 2mbgl respectively within the CLAY. 1m ² and 2m ² pad foundations at 1mbgl returns ABCs of 131 and 189kN respectively. 9.8MPa in the sound sandstone.
Anticipated Foundation Type	Based on anticipated building types at each plot, the following foundation solutions are considered : – Plot 3: Strip foundations. Option for vibro granular columns or mini piles around Trench 3. – Plot 4: required loading to be confirmed. – Plots 5, 6 & 7: shallow strip foundations. – Plot 8: assessment done by others.
Other Considerations	Consideration of effects of trees also needs to be considered. Temporary supports of excavations may be required. Detailed design should be carried out by structural engineer. Concrete Requirements DS3-AC-3 A design CBR of 5% is recommended. Given the variation of the Made Ground depths and the underlying Glacial Till CLAY of perceived low permeability, soakaways are not likely to be suitable on site.
Contamination	No elevated concentrations of contaminants or asbestos containing materials have been identified in the soil samples collected from site by LKC.
Waste Disposal	The HazWasteOnline assessment has classified the soils tested from site during the LKC investigation as Non-Hazardous Waste.

Requirements / Recommendations

The table below shows the requirements / recommendations for the site. This information should be documented in a Site Completion Report for submission to the Local Authority.

Requirements / Recommendations	Validation Requirements
<u>Earthworks Inspections / Unexpected Contamination</u> The relevant contractors should be briefed that during development works at the site should any unusual ground conditions and / or visual or olfactory evidence of contamination (including asbestos containing material) be encountered at the site, LKC and the Local Authority should be informed, and further assessment of the material may be required. Should asbestos be identified during groundworks, precautions should be taken to ensure the safety of the construction workers and nearby land users. It would be advisable to introduce an asbestos management strategy in line with CIRIA C733 ¹ .	Log of work undertaken including photographs. Details of any sampling undertaken and validation of any potential additional remedial work.
<u>Topsoil Growing Medium</u> Although no contamination was identified in the soils on site, the existing made ground is not expected to be a suitable growing medium given the nature of the soil and the undesirable material present (concrete and brick fragments, clinker and timber). A topsoil cover of at least 300mm is recommended in gardens and soft landscaping areas.	Chemical validation of imported soils: See Table 9-2.

¹ CIRIA (2014). "Asbestos in Soil and Made Ground: A Guide to Understanding and Managing Risks". C733.

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1 Introduction

1.1 Background

LK Consult Ltd (LKC) has been commissioned by Laidrah Ltd to carry out a Phase 2 Geo-Environmental Investigation for Alder Hey, Liverpool. The investigation was undertaken in support of a planning application to develop the site for residential and commercial use.

The following work has previously been undertaken:

- » Phase 1 Post Demolition and Phase 3 Geo-environmental Assessment Report, undertaken by Obsidian Environmental Ltd (Ref: OE/1702/844R1, dated May 2018).
- » Phase 2 Geo-Environmental Investigation Report, undertaken by LKC (Ref. LKC 22 1332-02, dated September 2022).

This report is a revision of the previous Phase 2 Report which included the wider site area to reflect the updated proposed development plan ("study area").

1.2 Site Details

A summary of the site details is presented in Table 1-1. Figure 1 indicates the site location and boundary. Figure 2 indicates the proposed development.

Site Location	South of Alder Road, Eaton Road is to the east of site, Liverpool, L12 2AZ. Centred at approximate National Grid Reference 340292E 391907N.
Approximate Area	Study Area: 1.51Ha Wider Site Area: 2.07Ha
Topography	40.94-41.57 metres Above Ordnance Datum (AOD). Site gently slopes down to the northeast.
Current Site Use	Vacant land with various building material and stockpiles present.
Purpose of Report	Planning.
Proposed Development	Six plots (Plots 3-8) which include low rise residential properties (Plots 3, 5, 6 and 7), specialist autism unit comprising 2-storey studio apartments (plot 4); and over-55's apartment block 4-5 storeys).

Table 1-1. Summary of site details.

2 Review of Previous Work

A Phase 1 Post Demolition and Phase 3 Geo-environmental Assessment Report, undertaken by Obsidian Environmental Ltd (Ref: OE/1702/844R1, dated May 2018). Relevant information is summarised in Table 2-1.

Main Historical Features	Onsite: agricultural land and small buildings prior to US Regimental Hospital constructed between 1918-1920. Annotated as Alder Hey Hospital from 1927. Recreational facilities, extension of buildings and provision of car parking undertaken onsite and wider hospital site since that time. Surrounding Area: railway line adjacent southwest.
Site Remediation	Demolition and remedial works have been carried out on the eastern part of the wider site and study area. The tender specification (2016) notes: <i>Old foundations, slabs and the like: Break out all down to 2.0 metres below existing ground level.</i> <i>Below this level retain foundations in situ but accurately record the plan area and location on the site.</i> <i>Plot the results on an AUTOCAD drawing for presentation as a DWG file to Alder Hey NHS Foundations Trust (AHNHSFT) and for subsequent uses by prospective site developers. Where the substructure encountered and is shown not to be solid below 2.0 metres i.e. it contains voids greater than 100mm in diameter, back fill the void with 6F2 material as specification. This clause relates to chambers, drainage, deep ducts and the like, already partially broken up at shallower depths by the demolition activities. Where substructures ducts and drainage are not encountered in the top 2.0m from existing ground levels yet is known to exist, predominately drainage then concrete fill the voids/pipes. Refer to clause R12/110.</i> <i>Contaminated material: Remove, and carry out remediation required by the Enforcing Authority.</i> The Obsidian Environmental Ltd report also notes: <i>In summary, there does not appear to be significant elevated chemical contaminants within on-site soils. The majority of the samples were taken within 0.0 to 0.5m and at 1.0mbgl. The initial 0.5m has now been removed as part of the demolition and site clearance works.</i>
Geology / Hydrogeology	Superficial: Glacial Till. Secondary Undifferentiated Aquifer. Bedrock: Chester Pebble Beds (sandstone). Principal Aquifer.
Landfills / Infilled ground	No recorded landfills.
Site Investigation	The report undertaken by Obsidian Environmental Ltd also included a summary of a pre demolition and remediation site investigation undertaken by ESG in 2015 on the wider site area. The ground conditions comprised 0.5m-1.0m of made ground underlain by Glacial Till. Sandstone bedrock was encountered at depths of between 1.7m to 8.7m below ground level. Made ground encountered during the Obsidian Environmental Ltd investigation was recorded to a maximum of 2.4mbgl associated with former foundations and subsequent backfill. Soil samples tested from the study site area by Obsidian Environmental Ltd did not identify any elevated concentrations of contaminants compared to the relevant generic assessment criteria available at the time of the report. One gas monitoring visit did not identify any elevated gas concentrations.

Table 2-1: Summary of site details, historical review, environmental settings and previous intrusive investigations.

A preliminary contamination conceptual model has been produced based off the conclusions in the Obsidian Environmental Ltd.'s report and has been updated to be in line with LKC current risk assessment methodology using contaminant-pathway-receptor pollutant linkages based on guidance in LCRM². The model is produced using only data relevant to the Study Area shown in Figure 3. It uses the criteria of residential with plant uptake as a conservative measure based on the proposed development in Figure 2.

The model is provided in Table 2-2.

LKC note that the former X-Ray department was to the south of the study area; therefore, this is not considered a potential contamination source.

Each pollutant linkage is described along with an assessment of the risk based upon guidance on probabilities and consequences outlined in CIRIA C552³. The risk matrix is provided in Appendix A.

Due to the minor consequence associated with the phytotoxic effect to flora (i.e. loss of plants in a landscaping scheme), the overall risk for the majority of sites will be very low to low. Where soils contain significant concentrations of heavy metals, in general there will be other pollutant linkages (i.e. the risk to human health) that will trigger the requirement for remediation (e.g. a clean environmental cover system). As such the risk to flora associated with phytotoxic contaminants will not be considered further.

The risk to buildings associated with elevated sulphate will be considered as part of the geotechnical assessment and will not be included in the contamination risk assessment.

It should be noted that there may be risk from short term exposure from contaminated soil to site workers during development work. The Preliminary Contamination Conceptual Model deals with long term exposure to key receptors associated with the future use of the site. Acute risks can be easily mitigated by good environmental management of the site during site works. Standard health and safety precautions (as per HSE guidance⁴) should be adopted by all workers involved with site enabling and construction works. Therefore, this receptor is not considered in the contamination conceptual model.

² Land Contamination Risk Management (LCRM) <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>

³ CIRIA (2001). "Contaminated Land Risk Assessment: A Guide to Good Practice". C552.

⁴ HSE (1991). "Protection of Workers and the General Public During Development of Contaminated Land" London HMSO.

Pollutant Linkage	Pathway	Receptor	Contaminant	Probability	Consequence	Risk	Assessment
PL1	– Dermal contact. – Inhalation of soil, fibres and dust. – Ingestion of soils, dust, home-grown produce, soil attached to home-grown produce. – Windblown dust.	– Future site users.	– ACM. – Heavy metals. – PAHs. – Petroleum hydrocarbons.	Unlikely	Medium	Low	– No elevated contaminants identified. – Recommendation: No remediation required.
PL2	– Inhalation of vapours. – Migration through permeable strata and preferential pathways.	– Future site users.	– Volatile Contaminants.	Unlikely	Medium	Low	– No elevated contaminants identified. – Recommendation: No remediation required.
PL3	– Inhalation of gas. – Migration through permeable strata and preferential pathways. – Explosion in confined spaces (methane only).	– Future site users. – Buildings.	– Carbon dioxide. – Methane.	Unlikely	Severe	Moderate / Low	– No elevated gas monitoring readings. – Recommendation: No remediation required.
PL4	– Surface Run-off. – Migration through permeable strata and preferential pathways – Perched waters migration.	– Groundwater (Principal Aquifer).	– Mobile contaminants: – Metals. – PAHs. – Petroleum hydrocarbons.	Unlikely	Medium	Low	– No elevated contaminants identified. – Recommendation: No remediation required.
PL5	– Ingestion of tainted water supply.	– Future site users. – Water pipes.	– Organic Contaminants: – Naphthalene. – Petroleum hydrocarbons. – Volatile compounds.	Unlikely	Medium	Low	– No elevated contaminants identified. – Recommendation: Barrier piping unlikely to be required. However, this will need to be confirmed once UU risk assessment undertaken.

Table 2-2: Preliminary Contamination Conceptual Model.

3 Ground Investigation

3.1 Site Investigation Design and Methodology

The scope of the investigation was provided by Civic Engineers in the Ground Investigation Performance Report document (ref. 1248-01 dated 14th April 2020) and was designed to supplement the existing information.

The investigation was carried out on 25th July to 5th August 2022 and comprised the following:

- » 5no. window sample boreholes drilled to 4.40-5.45 metres below ground level (mbgl) (ref. WS1 to WS5).
- » 8no. cable percussion boreholes drilled to 6.7-9.8mbgl with follow on / adjacent rotary to 10.5-15.5mbgl (ref. B1-B8, RB2).
- » 3no. slit trenches (using JCB) excavated to 2.0-2.7mbgl (ref. ST1-ST3).
- » 6no. light weight deflectometer tests to 1mbgl (ref. LWD1 to LWD6).

Only half of ST1 was able to be completed due to the presence of a possible gas pipe and a stockpile above the western part of the trench.

These locations were carried out as a wider site investigation, note that some locations are not present in the study area.

All site investigation locations from the study area and wider site area are shown in Figure 3.

3.2 Well Installations

All (B1-B8) of the cable and rotary boreholes were installed with monitoring wells for groundwater monitoring. Monitoring wells were installed in accordance with BS10175⁵ and CIRIA C665⁶ and generally comprised approximately 1m plain pipe over a length of slotted pipe surrounded by pea gravel and sealed at the top with bentonite and concrete.

Well installation details are provided in Profile Logs in Appendix B.

3.3 Sampling Protocol

3.3.1 Soil Sampling (Contamination)

Standard sampling protocol and preservation of samples was undertaken as described in the EA guidance on site investigation⁷.

Soil was collected for onsite testing. A plastic zip bag was half filled with soil allowing a suitably sized headspace. The bag was sealed and stored for at least 20 minutes before being tested for total volatile organic compounds (TVOCs) using a Mini Rae Lite+ photoionisation detector (PID). Results of the PID readings are presented on the profile logs (Appendix B). The on-site monitoring was carried out in line CIRIA C665⁸ to aid in screening samples for volatile analysis.

⁵ British Standard (2017). "Investigation of Potentially Contaminated Sites – Code of Practice." BS10175:2017.

⁶ CIRIA (2007). "Assessing Risks Posed by Hazardous Ground Gases to Buildings." CIRIA C665.

⁷ EA (2000). "Technical Aspects of Site Investigation. Volumes 1 & 2 Text Supplements Research and Development Technical Report." P5-065/Tr.

⁸ CIRIA (2007). "Assessing Risks Posed by Hazardous Ground Gases to Buildings." CIRIA C665.

Soil samples of approximately 500g were recovered in amber jars, amber vials for volatile analysis and plastic tubs. All the samples were labelled and stored in cool boxes prior to being collected by courier at the end of the day for delivery to the Chemtest laboratory in Newmarket for chemical testing. If collection was not possible the same day then samples were stored in the sample storage fridge at the LK Group offices below 4°C. Samples were tracked using appropriate Chain of Custody forms provided by Chemtest.

Many of the contamination tests are UKAS or MCERTS accredited and further details are given in the Certificate of Analysis presented in Appendix C. Table 3-1 shows the soil testing undertaken.

Suites and Contaminants	No. Samples	Location & Depth	Justification
Metals / metalloids, pH, water soluble sulphate, speciated PAHs, SOM and asbestos screen.	9	B3 0.0-0.8m B6 0.0-1.5m B8 0.5-0.9m ST1M 0.0-0.7m ST2N 0.0-0.7m W1 0.0-0.5m W5 0.0-0.4m	A basic suite with a broad selection of contaminants tested on samples across the site where no significant evidence of contamination was identified (with the exception of frequent brick and concrete) and no TVOCs identified from the PID tests.
Metals / metalloids, pH, water soluble sulphate, cyanide suite, phenol, TPHCWG, BTEX, MTBE, speciated PAHs, SOM and asbestos screen.	3	ST2S 0.0-0.5m ST3M 0.5-1.3m ST3S 0.0-1.0m	Although no visual/olfactory evidence of contamination was identified (with the exception of ash and organic material), due to location of former buildings, a detailed suite was undertaken

Table 3-1. Summary of soil sample testing undertaken.

Notes:

If asbestos present during screen identification and quantification will be undertaken.

Metal/metalloids=arsenic, cadmium, chromium, (total and hexavalent), copper, lead, mercury, nickel, selenium, vanadium, zinc and boron; TPHCWG=carbon banded and aromatic/aliphatic split petroleum hydrocarbons; PAH=polycyclic aromatic hydrocarbons, BTEX=benzene, toluene, ethylbenzene and xylenes; MTBE=Methyl tert-butyl ether, SOM=Soil Organic Matter.

3.4 Groundwater Monitoring

All the installed boreholes have been monitored for groundwater levels on one occasion.

Monitoring was undertaken using a Hydro Technik dip meter. The monitoring results are reproduced in full in Section 4.2.1.

3.5 Geotechnical Testing

3.5.1 In-situ Onsite Geotechnical Testing

In-situ geotechnical tests were performed in the boreholes to further characterise the sub-soil conditions. The following tests were undertaken:

- Standard Penetration Tests (SPTs) were performed in the window sample boreholes and cable percussion boreholes at approximately 1m intervals, generally within the natural strata.
- Shear Vane and pocket penetrometer tests (giving undrained shear strength) were performed in the window sample boreholes (to a maximum depth of 3mbgl) and trial pits at approximately 1m intervals, within the natural clay strata.

Shear vanes and pocket penetrometer tests were not always possible due to the friable or gravel rich nature of some of the clay deposits.

The SPT and shear vane readings are provided within the profile logs (Appendix B).

3.5.2 Laboratory Geotechnical Testing

Soil samples taken during the investigation were collected in tubs, bulk bags and sealed U100 tubes and sent to Murray Rix Laboratories and Chemtest for geotechnical testing.

Many of the tests are UKAS accredited and further details are provided on the Certificates of Analysis provided in Appendix D. Table 3-2 shows the geotechnical testing undertaken.

Suites and Contaminants	No. Samples	Location		Justification
pH and water-soluble sulphate	4	ST2M 0.6-1.0m ST1E 1.0-1.7m B2 1.2-1.65m B6 1.2-1.65m		Additional samples of natural ground taken across the site to assess the pH and sulphate for geotechnical purposes. pH and water-soluble sulphate are also included in the contamination testing suites.
Atterberg Limits (plasticity testing)	11	B1 2.2-2.65m B2 3.3-3.75m B4 1.2-1.65m B4 4.4-4.95m B6 3.3-3.75m B8 3.8m	W1 2.3-2.7m W2 1.7-2.0m W3 2.5-3.0m W4 1.7-2.0m W5 2.7-3.0m	A selection of clay samples across the site were tested for Atterberg Limits to assess their shrinkability potential associated with current and proposed trees.
Triaxial	10	B1 3.2-3.65m B2 4.3-4.75m B2 7.0-7.45m B3 4.2-4.65m B4 2.2-2.65m	B5 3.2-3.65m B6 2.2-2.65m B7 4.5-4.95m B8 3.3-3.75m B8 5.4-5.85m	Undertaken on cable percussive samples to confirm the strength of the clay strata.
Unconfined Compressive Strength (UCS)	8	B1 7.05-7.25m B4 6.75-6.95m B5 10.27-10.50m B5 11.8-11.95m	B6 12.3-12.5m B7 9.65-9.90m B7 12.80-13.0m B8 14.8-14.98m	UCS testing undertaken to confirm strength of rock.

Table 3-2: Summary of geotechnical testing undertaken.

3.5.3 Lightweight Deflectometer Tests

6no. lightweight deflectometer (LWD) tests were undertaken to determine the characteristic strength of the shallow ground. Equivalent CBR values can be calculated from the LWD tests.

The LWD was carried out at either end of each slit trench, the results are provided in Appendix E.

4 Ground Conditions

4.1 Geology – Generalised Sequence

The ground conditions beneath the site comprised made ground underlain by natural sandy gravelly clay. A summary section of the logs is provided in Plate 4-1, with additional comments below.

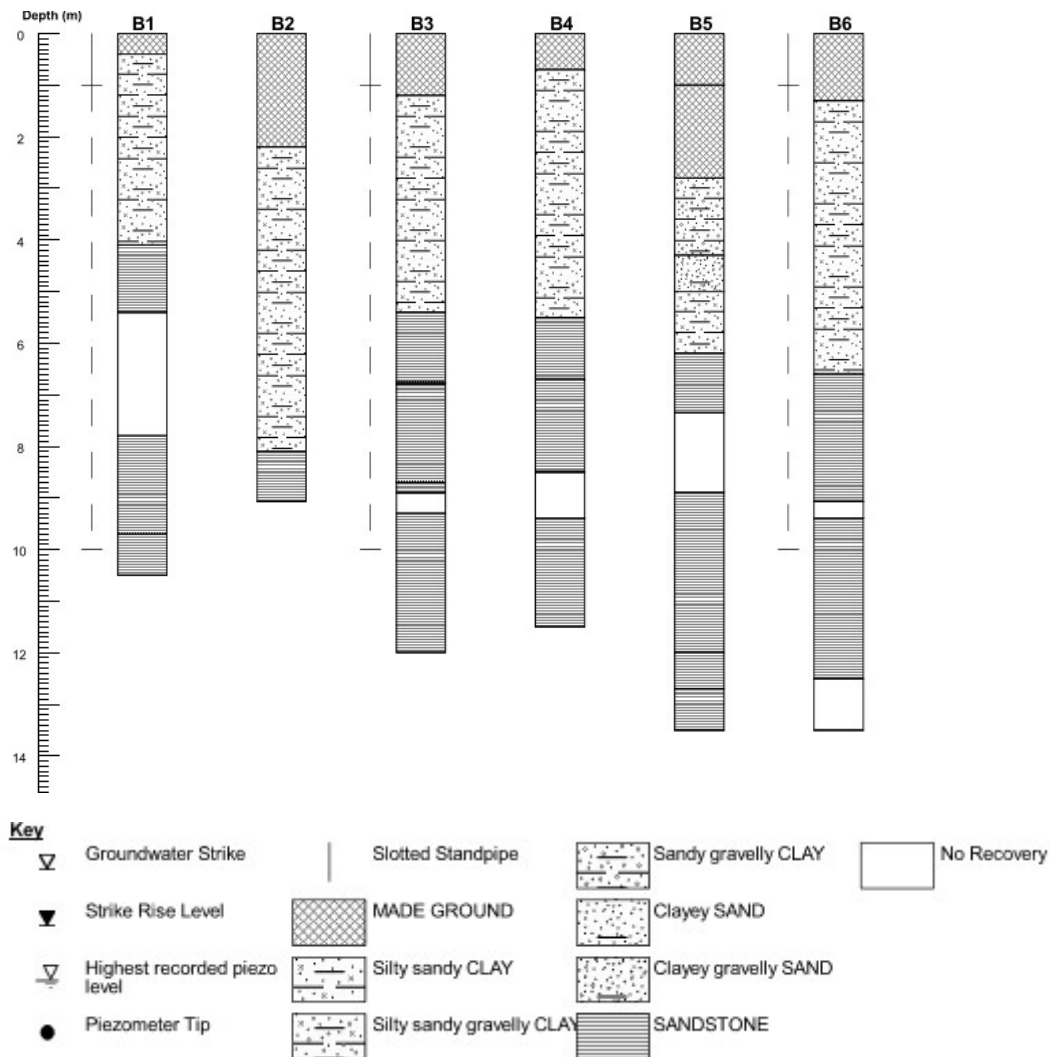


Plate 4-1: Summary of ground conditions.

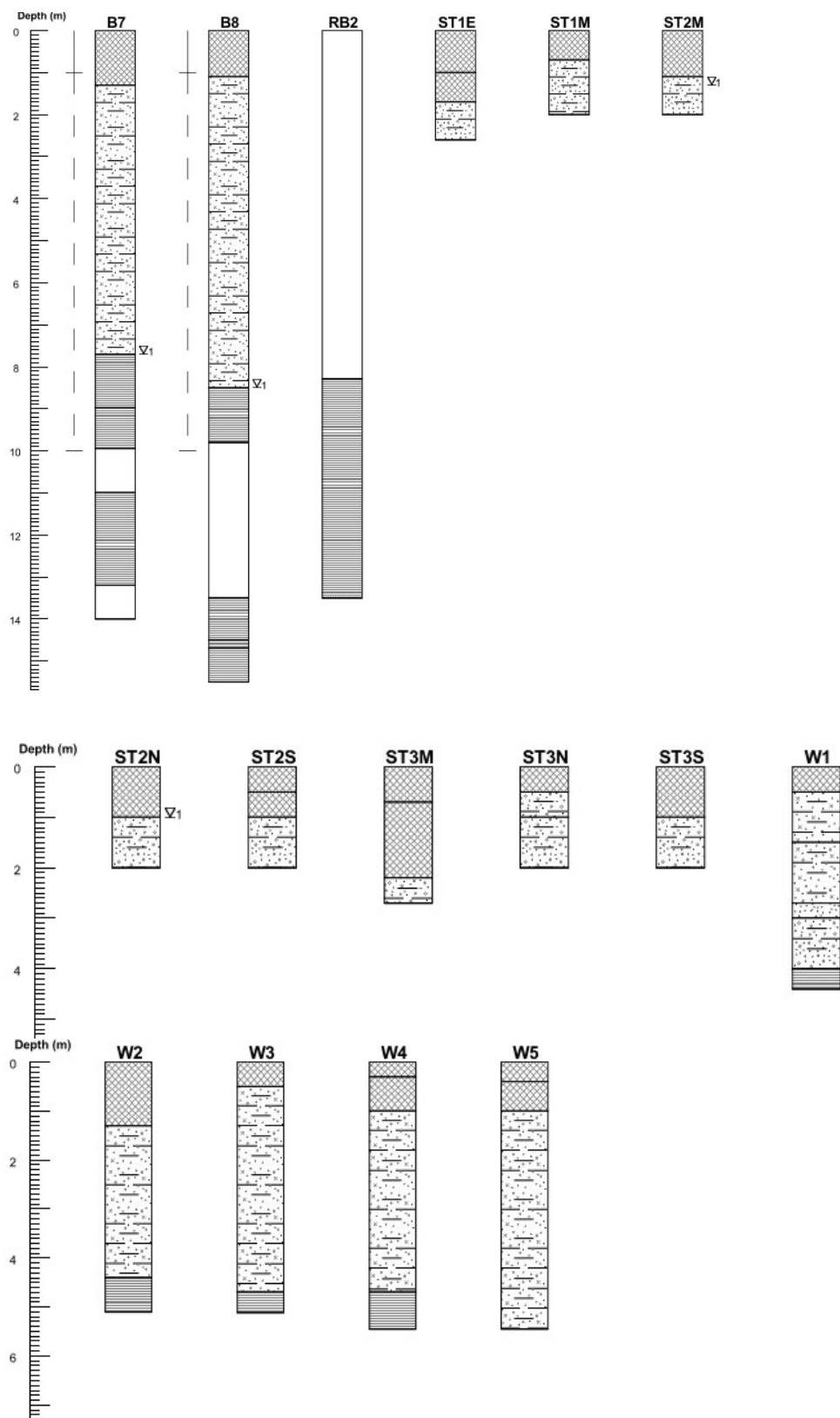


Plate 4-1 (continued): Summary of ground conditions.

Additional information on ground conditions:

Made Ground

Made ground was recorded in all boreholes and trenches to depths of 0.5-2.2mbgl. The made ground mainly comprised horizons of silty/clayey sandy gravel with anthropogenic material including ash, brick, concrete, metal and timber.

The slit trenches identified large boulders of concrete and boulder sized parts of brick walls. These trenches also identified reworked clay with rare brick and timber fragments from 1.0-2.2mbgl (ST3M, ST2S and ST1E). No intact in-situ foundations were encountered.

Natural Strata

Natural strata comprised firm to very stiff gravelly, sandy, silty clay.

Weathered sandstone bedrock was encountered at depths of between 4.0-8.5mbgl.

Contamination

With the exception of the anthropogenic material encountered in the made ground (as described above), no further visual or olfactory evidence of potential contamination was identified.

The PID recorded a maximum of 0.1ppm TVOC in the headspace testing.

4.2 Groundwater

4.2.1 Groundwater Levels

Groundwater strikes were recorded during the investigation in slit trenches and boreholes. In addition, groundwater monitoring within the borehole wells has been undertaken on one occasion.

No groundwater was encountered in any window sample boreholes (W1-W5) or in ST1 and ST3. Results of observed strikes and monitoring levels are summarised in Table 4-1.

BH/TP	Water Strike Depths (mbgl)	Well Response Zone (mbgl)	Monitoring Depths (mbgl)		Sample Taken?	Evidence of Contam?
			Groundwater	Base		
ST2	1.0-1.3	-	-	-	N	N
B1	Dry	1.00-10.00 (C, S/S)	8.14	10.00	N	N
B2	Dry	1.00-9.00 (MG,C, S/S)	6.47	9.17	N	N
B3	Dry	1.00-10.00(C,S/S)	7.17	9.90	N	N
B4	Dry	1.00-10.00 (C, S/S)	7.25	9.92	N	N
B5	Dry	1.00-8.00 (MG, C, S/S)	6.94	7.00	N	N
B6	Dry	1.00-10.00 (MG, C, S/S)	7.05	9.79	N	N
B7	7.7	1.00-10.00 (MG, C, S/S)	6.65	9.21	N	N
B8	8.5	1.00-10.00 (MG, C, S/S)	6.60	10.00	N	N

Table 4-1: Summary of observed water strike depths and measured groundwater levels within boreholes and trial pits.

Response Zones: MG=Made Ground; S/S = Sandstone; C=Clay.

4.3 In-Situ Geotechnical Testing

4.3.1 Standard Penetration Tests

In-situ standard penetration tests (SPTs) were undertaken, predominantly in the natural ground. The results are summarised in Table 4-2 and provided within the profile logs in Appendix B.

Approximate Depth (mbgl)	SPT 'N' Values				
	W1	W2	W3	W4	W5
1-2	5 (C)	7 (MG, C)	11 (C)	12 (C)	9 (C)
2-3	9 (C)	13 (C)	13 (C)	10 (C)	9 (C)
3-4	11 (C)	24 (C)	21 (C)	18 (C)	21 (C)
4-5	50 (S/S)	47 (S/S)	34 (C)	24 (C)	38 (C)
5-6	-	50 (S/S)	50 (S/S)	32 (S/S)	29 (C)

Table 4-2: Summary of SPT (N) values.

Notes:

S/S = Sandstone; C=Clay.

Approximate Depth (mbgl)	SPT 'N' Values			
	B1	B2	B3	B4
1-2	-	8 (MG)	7 (C)	10 (C)
2-3	22 (C)	19 (MG, C)	-	-
3-4	-	21 (C)	20 (C)	24 (C)
4-5	50 (S/S)	-	-	29 (C)
5-6	-	26 (C)	50 (S/S)	50 (S/S)
6-7	-	-	50 (S/S)	50 (S/S)
7-8	-	50 (S/S)	-	-
8-9	-	50 (S/S)	-	-

Continued Table 4-2 (cont.): Summary of SPT (N) values.

Notes:

S/S = Sandstone; C=Clay.

Approximate Depth (mbgl)	SPT 'N' Values			
	B5	B6	B7	B8
1-2	7 (MG)	11 (C)	16 (C)	6 (C)
2-3	4 (C)	-	-	20 (C)
3-4	-	20 (C)	21 (C)	-
4-5	34 (S)	22 (C)	-	22 (C)
5-6	28 (S/S)	-	24 (C)	-
6-7	-	50 (S/S)	-	-
7-8	50 (S/S)	-	50 (S/S)	23 (C)
8-9	-	>50 (S/S)	>50 (S/S)	50 (S/S)
9-10	-	>50 (S/S)	-	50 (S/S)

Continued Table 4-2 (cont.): Summary of SPT (N) values.

Notes:

S/S = Sandstone; C=Clay; S=Sand.

4.3.2 Shear Vanes and Pocket Penetrometer Readings

Hand shear vane readings, recording undrained shear strength (s_u), were taken within the clay strata. The results are summarised in Table 4-3 and provided within the profile logs in Appendix B.

Approximate Depth (mbgl)	Average Undrained Shear Strength (kN/m ²)				
	W1	W2	W3	W4	W5
0-1	24.53	-	52.73	-	-
1-2	106.28	42.92	94.01	36.79	66.00
2-3	-	131.82	121.4	137.00	59.27
3-4	-	-	-	88.29	121.04
4-5	-	-	73.58	49.05	151.07

Table 4-3: Summary of average hand shear vane readings.

Notes:

Shear vane readings can be influenced by coarse material including silt.

Approximate Depth (mbgl)	Average Undrained Shear Strength (kN/m ²)			
	ST1E	ST1M	ST2M	ST2N
1-2	58.00	50.67	45.50	45.60

Continued Table 4-3 (cont.): Summary of average hand shear vane readings.

Notes:

Shear vane readings can be influenced by coarse material including silt.

Approximate Depth (mbgl)	Average Undrained Shear Strength (kN/m ²)			
	ST2S	ST3M	ST3N	ST3S
0-1	29.50	-	42.50	-
1-2	46.25	28.00	59.00	48.50
2-3	-	54.00	-	-

Continued Table 4-3 (cont.): Summary of average hand shear vane readings.

Notes:

Shear vane readings can be influenced by coarse material including silt.

4.4 Geotechnical Laboratory Testing

4.4.1 Single Stage Triaxial Test

Single stage triaxial testing has been undertaken on ten samples of the natural clay strata. The results are presented in Appendix D and summarised in Table 4-4.

Location	Depth (mbgl)	Undrained Shear strength (kPa)
B1	3.2-3.65	102
B2	4.3-4.75	95
B2	7.0-7.45	134
B3	4.2-4.65	101
B4	2.2-2.65	103
B5	3.2-3.65	135
B6	2.2-2.65	116
B7	4.5-4.95	106
B8	3.3-3.75	157
B8	5.4-5.85	73

Table 4-4: Summary of single stage triaxial results.

4.4.2 Atterberg Limits

Representative samples of natural clay were subjected to Atterberg Limits (plasticity) and Moisture Content testing. Results are presented in Appendix D and summarised in Table 4-5.

Table 4-5 also includes the modified plasticity index as detailed in Chapter 4.2-D5 of the NHBC standards (modified plasticity index = plasticity index x % less than 425µm sieve / 100%).

Location	Depth (mbgl)	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Class	Passing 425 micron (%)	Modified Plasticity Index (%)
B1	2.2-2.65	12.5	36	12	24	CM	86	20.64
B2	3.3-3.75	13.6	35	12	23	CL	88	20.24
B4	1.2-1.65	17.3	33	14	19	CL	91	17.29
B4	4.4-4.95	11.2	34	12	22	CL	82	18.04
B6	3.3-3.75	15.1	34	13	21	CL	90	18.90
B8	3.80	13.6	34	13	21	CL	84	17.64
W1	2.3-2.7	15.6	36	14	22	CM	87	19.14
W2	1.7-2.0	19.1	36	14	22	CM	81	17.82
W3	2.5-3.0	16.1	36	13	23	CM	85	19.55
W4	1.7-2.0	16.5	31	12	19	CL	86	16.34
W5	2.7-3.0	14.9	31	13	18	CL	90	16.20

Table 4-5: Summary of plasticity index testing.

The modified plasticity index is between 16.20% and 20.64%. This characterises the clay as having a low to medium volume change potential low with an average plasticity index of 21% and an average modified plasticity index of 18.34%.

4.4.3 Uniaxial Compression Strength Test

Uniaxial Compression Strength (UCS) Test have been undertaken on samples of the natural red sandstone strata. The results are presented in Appendix D and summarised in Table 4-6.

Location	Depth (mbgl)	Compressive Strength (MPa)
B1	7.05-7.25	9.3
B4	6.75-6.95	18.0
B5	10.27-10.50	15.4
B5	11.8-11.95	10.1
B6	12.3-12.5	11.1
B7	9.65-9.90	14.2
B7	12.8-13.0	9.7
B8	14.8-14.98	10.4

Table 4-6 Summary of UCS Test results.

4.4.4 Sulphate and pH

Water soluble sulphate and pH tests were carried out on soil samples. Full results are presented in Appendix C and D and summarised in Table 4-7.

Strata	pH	Sulphate (g/l)
Made Ground	8.3-10.9	<0.01-1.8

Table 4-7: Summary of pH and sulphate results.

4.4.5 Lightweight Deflectometer Tests

Equivalent California Bearing Ratio (CBR) values were calculated from the Lightweight Deflectometer (LWD) test results. Tests were carried out at surface level, 0.5mbgl and 1.0mbgl.

Results and equivalent CBR results are presented in Appendix E.

Equivalent CBR readings in the made ground varied between 5- 60%. Generally, the readings taken from 1.0mbgl in clay produced values of 5-9%. Readings in made ground at 0.5mbgl produced readings between 5-20%. Surface tests produced values of 5-60%.

5 Geotechnical Assessment

5.1 Proposed Development

For the purpose of this report only Plots (3-7) within the relevant study area will be assessed. It is understood that the client has sufficient data from previous investigations for Plot 8 and no further consideration shall be given to this plot.

For further geotechnical information for plots in the wider site area see the previous LKC Phase 2 report (ref. LKC 22 1332-02, dated September 2022).

The finished ground levels have not been provided and it is therefore anticipated that they will not vary significantly from current levels. However, should the development proposals or finished levels be altered then the comments/recommendations in this section may require revising.

The depths of any underground engineering works (sewers etc.) are unknown and therefore have not been taken into account in the following assessment. It is considered that any such works will be designed so as not to have an effect on, or compromise, proposed or existing foundations or ground stability.

Given the nature of the proposed development it is considered that the structures meet the criteria of Geotechnical Category 1 of Euro Code 7⁹.

5.2 Summary of Ground Conditions

Ground conditions identified at the site are detailed in Section 4.1, and typically comprises Made Ground up to 2.20mbgl over natural cohesive superficial deposits of firm to very stiff CLAY (Glacial Till) to depths of between 4.00m and 8.50mbgl where bedrock comprising Sandstone of the Chester Formation Sandstone is encountered. Bedrock is encountered at c.4.00mbgl in the west of the site, falling deeper to c.8.50mbgl in the east of the site.

5.3 Site Preparation

The site should be cleared and any vegetation below areas of proposed development stripped in accordance with Series 200 of the Specification for Highway Works. This should include:

- » Roots present below the footprint of proposed structures and infrastructure should be grubbed out and the resulting void infilled with suitable compacted engineered fill;
- » Redundant services should be sealed off and grubbed out and replaced with suitable compacted engineered fill; and,
- » Buried structures and old foundations can be anticipated on site. These should be excavated from below the proposed development footprint with the resulting void backfilled.

The near surface soils may potentially be disturbed by weathering and site traffic. Precautions should be taken to avoid this, as excessive disturbance may result in more onerous floor slab design, road cap thickness and increased amount of site disposal etc. Based on site observations the near surface soils may require at least some

⁹ British Standard. Eurocode 7: Geotechnical design – Part 1: General Rules. BS EN 1997-1:2004+A1:2013.

treatment or reinforcing to allow safe movement of construction plant and labour. A working platform will be required for piling plant.

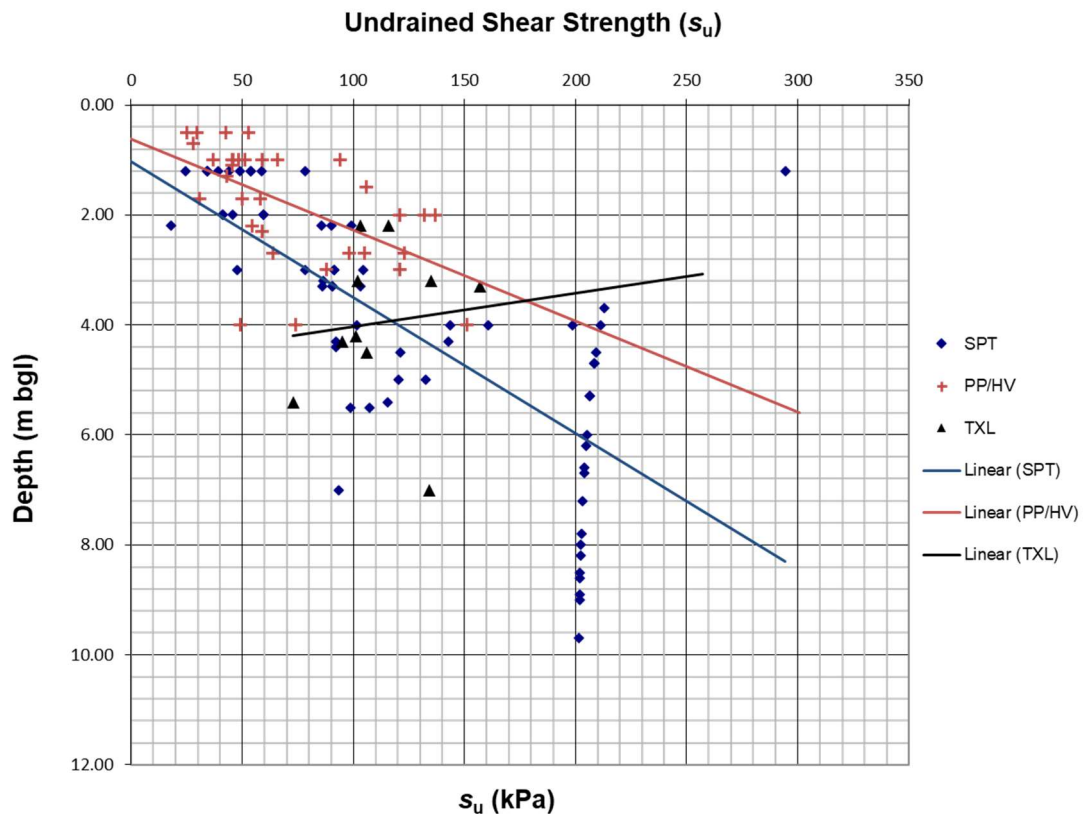
5.4 Foundation Conditions and Bearing Capacity

5.4.1 General

It is considered that the Made Ground is not suitable for a founding material due to the inherent variability of the material. Foundation options are therefore:

- Strip foundations into the underlying firm to very stiff Glacial Till CLAY;
- Conventional strip footings on vibro granular columns;
- Pad foundations supporting column loads; and,
- Deeper pile foundations.

Strength of the natural cohesive material has been assessed using in-situ testing by SPT, Pocket Penetrometer (PP), Hand Shear Vane (HV) and by laboratory testing by single stage undrained Triaxial (TXL). The results of the testing have been plotted against depth as is shown in Graph 5-1 below:



Graph 5-1: Summary of s_u vs depth from in-situ SPT, SHDP and HV testing.

From Graph 5-1 it can be seen that the strength of the cohesive deposits typically increases with depth.

Bedrock comprising Sandstone of the Chester Sandstone Formation has been encountered across the site, typically at a depth of c. 4.00m in the west of site, increasing in depth to 8.50mbgl in the east of the site. Unconfined compressive strength tests returned values of between 9.3-18.0MPa, averaging 9.8MPa.

5.5 Plots 3, 5, 6 & 7

It is understood that Plots 3, 5, 6 & 7 comprise low rise housing. Loadings of the structures have not been provided and have been assumed to be 75kN/m² for preliminary purposes.

5.5.1 Strip Foundations

A conservative s_u of 40kPa is assigned to the cohesive material from a depth of c. 1mbgl, increasing to 60kPa at a depth of c. 2mbgl, for the natural superficial deposits, returning an allowable bearing capacity (ABC) of 82kN/m² at 1.00mbgl, increasing to 123kN/m² at 2.00mbgl and for strip/trench fill foundations.

It is considered that strip foundations will likely prove suitable for the low rise residential accommodation in Plots 3, 5, 6 & 7. An existing creche building occupies a section of Plot 5, further inspection of the site to confirm the ground conditions should be undertaken post demolition in order to obtain suitable geotechnical information on ground conditions at this location.

Strip foundations should be constructed at least 150mm into the underlying firm to stiff CLAY.

Atterberg limits determinations, summarised in Table 4-5 shows the clay to be of low to medium plasticity and as such the sides of the foundations may require protection using clay board or similar.

Foundation depths should take account of the presence of existing and proposed trees with foundations deepened locally in accordance with the requirements of NHBC Standards for a clay of high plasticity. It is recommended that at working drawing stage a foundation schedule is prepared for the development taking account of the soil plasticity and the locations of trees.

5.5.2 Ground Improvement

The use of ground improvement techniques such as vibro granular columns will allow shallow foundations to be utilised with the deeper Made Ground such as the area around Slit Trench 3 in Plot 3 where Made Ground was recorded up to 2.20m in thickness. The vibro granular columns should provide a bearing capacity of around 150kN/m² but will also remove variability within the Made Ground. Specialist advice should be sought from a suitably experienced contractor with regard to allowable bearing capacity and settlements.

5.5.3 Mini-Piled Foundations

As an alternative consideration maybe given to the use of mini-pile foundations, especially in Plot 3 where Made Ground has been recorded up to 2.20m in thickness.

Mini piles would negate the requirement for deep excavations and removal off site of spoil and remove costs for pouring the quantities of concrete required in strip/trench foundations. Mini piles for houses is a cheaper and more reliable foundation option for brownfield sites.

Pile design should be undertaken by a specialist contractor to allow them to reduce the factor of safety based on their extensive pile testing data.

The thickness of Made Ground in Plot 3 has been recorded up to 2.20m. Consideration must be given for the potential for negative skin friction to occur and should be incorporated into pile design.

Recommendation

Strip foundations are considered suitable for majority of the site. In the area of Slit Trench 3 in Plot 3, deeper Made Ground would render deep strip foundations uneconomic and whilst a ground improvement option is viable, it is considered that mini piles in this area will provide the most reliable and cost effective option.

5.6 Plot 4

It is understood that Plot 4 will comprise a specialist autism provision unit. Loadings of the structure have not been provided and the following is for assessment purposes only, foundation design should be undertaken by the structural engineer.

At the time of the LKC investigation, a Creche building was still in place on part of Plot 4 and the following is based upon information obtained elsewhere on site. Further inspection of the site to confirm the ground conditions should be undertaken post demolition in order to obtain suitable geotechnical information on ground conditions at this location.

A conservative s_u of 40kPa is assigned to the cohesive material from a depth of c. 1mbgl, increasing to 60kPa at a depth of c. 2mbgl, for the natural superficial deposits, returning an allowable bearing capacity (ABC) of 82kN/m² at 1.00mbgl, increasing to 123kN/m² at 2.00mbgl and for strip/trench fill foundations.

Strip foundations should be constructed at least 150mm into the underlying firm to stiff CLAY.

Recommendation

Confirmation of requirement loading and further investigation required post demolition of existing structures.

5.7 Ground Floor Slabs

Due to the presence of substantial thickness' of Made Ground across the site it is considered that ground bearing floor slabs, whilst viable, will require detailed design to accommodate variability of the formation and account for differential settlement. Should a piled foundation solution be adopted for the offices and apartments then it is considered that these will have a suspended or piled floor due to the potential for differential settlements to occur between the floor and the shell of the building.

At the locations of the proposed houses it is recommended that suspended floor slabs are used in order to satisfy the requirements of warranty providers such as NHBC or LABC.

The Atterberg Limits determinations, summarised in Table 4-5, show the CLAY to be of low to intermediate plasticity and as such liable to heave. Therefore it is considered that a suspended floor slab would be more appropriate.

5.8 Pavement Construction

It is considered that the topsoil is not suitable for use as a sub-grade. Untreated Made Ground is considered unsuitable as a sub-grade due to its potential variability and potentially low strength/high compressibility.

CBR tests have been undertaken using a LWD within the split trenches at ground level. 0.50mbgl and 1.00mbgl, returning values of 5-60%, 5-20% and 5-9% respectively.

It is recommended that a CBR value of 5% is adopted for the design of roads and pavements at this site.

Based on the plasticity index the soils may be frost susceptible. Frost action can cause differential heaving, surface roughness and cracking, blocked drainage, and a reduction in bearing capacity during thaw periods. In areas of proposed roads and car parking it may be necessary to remove the frost susceptible soils and replace with non-frost susceptible material to the expected frost depth penetration.

Following excavation the sub formation should be proof rolled and any soft material inspected and removed.

5.9 Drainage

The presence of substantial depths of Made Ground across the site may result in settlement. It is therefore recommended that drain runs are designed using steeper gradients and flexible joints to allow for some differential settlement.

The variable thickness of the Made Ground (0.4-2.8m), the lateral continuity of which cannot be assured, underlain by CLAY of perceived low permeability would preclude the use of soakaway drainage for disposal of surface water runoff.

5.10 Concrete Durability

Based upon the results of the chemical analyses summarised in Table 4-7 it is considered that subsurface concrete should be designed in accordance with Design Sulphate Class DS-3, Aggressive Chemical Environment for Concrete Classification (ACEC) AC-3 in accordance with the recommendations provided in BRE Special Digest 1 (2005).

The highest concentrations of sulphates were returned from the areas of the Split Trenches undertaken at Plots 1, 3 & 4, further testing and delineation may reduce the sulphate class for other plots on the site.

5.11 Excavations

Site observations indicated that excavations should be feasible in the near surface with normal plant, however obstructions can be expected in the near surface including former foundations and former floor slabs. It is anticipated that any obstructions will be grubbed out during the reduced level dig for the sub structure works.

Groundwater was recorded in boreholes B7& B8 at the eastern boundary of the site at depths of between 7.70m and 8.00m. The strike in B7 rose to 6.70m after 20 minutes. The strikes are considered evident of isolated perched water in the Glacial Till. Within Slit Trenches ST2M and ST2N, groundwater was recorded at depths of 1.30m and 1.00mbgl respectively and considered representative of water perched on the Glacial Till beneath the Made Ground.

Some of the exploratory holes (ST2M & ST2N) were observed to be unstable during the excavation and the Made Ground and natural deposits included granular strata containing perched groundwater. The short and long term stability of near vertically sided excavations can therefore not be guaranteed and random and sudden instability within these soils should be anticipated.

Due to the variability of the Made Ground it is considered that all excavations are supported or battered back in accordance with guidance contained in CIRIA R97¹⁰. Groundwater seepages were noted in two trial pits; however, these were minor and it is considered that conventional sump pumping should be adequate.

5.12 Further Works

It is considered that the following works, if undertaken, would assist in reducing risk and construction costs:

- » Confirmation of ground conditions post demolition of the Creche building
- » Additional sulphate tests for delineation of areas with DS-3, AC3 classification of concrete.
- » BRE 365 Soakaways.

5.13 Construction Activity and Inspection

The following activities and inspections should be incorporated into the site works:

- » Due to the variability of the soils at the site it is recommended that sufficient allowance is made for the inspection of formation and sub formations to foundations and pavement construction;
- » Excavations where access is required should be subject to a risk assessment from a competent person and where appropriate mitigation measures such as benching back the sides or use of support systems in accordance with CIRIA R97 utilised;
- » It is considered that de-watering may be required, especially following periods of heavy rainfall. Removal of surface water and water within trenches should be possible with conventional sump pumping. Discharge of any water should be agreed with the relevant regulatory body and be undertaken under a trade effluent discharge, where required. Measures to remove silt and suspended solids may be required and consideration should be given to provision of space for settling tanks or an attenuation pond;
- » Where access to confined spaces is required appropriate mitigation measures should be addressed within the Construction Stage Health and Safety Plan. Particular account should be taken of the gas results;
- » The presence of potential contamination and mitigation measures should be addressed as part of the Construction Stage Health and Safety Plan and should include measures to design out the risks, reduce their impact and finally the use of Personnel Protective Equipment (PPE).

¹⁰ CIRIA Report 97 – Trenching Practice – Second Edition (2001 revision)

6 Generic Risk Assessment

6.1 Introduction

Current good practice requires that the findings from a site investigation should be evaluated on a site-specific basis, using a risk-based approach. Risk assessment involves identification and evaluation of the hazards presented by the concentrations of contaminants measured followed by an evaluation of the risks which are associated with these hazards (LCRM¹¹). Information gathered from the risk assessment has been collated in the revised contamination conceptual model in Section 6.6.

6.2 Soil Risk Assessment

6.2.1 Methodology

With regards to the soil risk assessment LKC will use the following hierarchy:

- Category 4 Screening Levels (C4SLs).
- LQM Suitable 4 Use Levels (S4ULs).

C4SLs were published in 2013^{12,13}. The recent change to the contaminated land guidance has changed the evaluation of risk from 'minimal' (referred to as Health Criteria values (HCVs))¹⁴ used to generate Soil Guideline Values (SGVs) to 'low' (referred to as Lowest Level of Toxicological Concern (LLTCs)). The policy companion document and supporting letter by Defra, dated 3rd September 2014, states that C4SLs *'could be used under the planning regime, as well as within Part 2A'*. Based on these comments LKC considers the justifications and assumptions used to generate 'low' risk are suitable for the planning regime.

Where no C4SLs have been generated LKC will use the LQM S4ULs¹⁵. Similar assumptions and land uses to C4SLs have been used. However, toxicological information has been based on 'minimal risk' as per previous guidelines and assumptions^{16,17,18,19}.

If contaminants are not present as C4SLs and S4ULs then LKC will use ATRISK SSVs or CL:AIRE GACs²⁰. These follow the 'minimal' risk principle and more stringent exposure parameters and will be conservative.

LKC consider the main risk drivers for PAHs are benzo(a)pyrene (B(a)P) and naphthalene. This is due to B(a)P possibly being a carcinogen and most toxic of the

¹¹ Land Contamination Risk Management (LCRM) <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>

¹² Defra (2014). "SP1010: Development of Category 4 Screening Levels and Assessment of Land Affected by Contamination – Policy Companion Document."

¹³ CL:AIRE (2013). "SP1010: Development of Category 4 Screening Levels and Assessment of Land Affected by Contamination – Final project Report."

¹⁴ EA (2008). "Human Health Toxicological Assessment of Contaminants in Soils." Science Report – SC050021/SR2.

¹⁵ LQM (2014). "The LQM/CIEH S4ULs for Human Health Risk Assessment."

¹⁶ EA (2008). "Updated Technical Background to the CLEA Model." Science Report – SC050021/SR3.

¹⁷ EA (2008). "Human Health Toxicological Assessment of Contaminants in Soils." Science Report – SC050021/SR2.

¹⁸ EA (2008). "A Review of Body Weight and Height Data used within the Contaminated Land Exposure Assessment Model (CLEA)." Project SC050021/Technical Review 1.

¹⁹ EA (2009). "Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values." Science report SC050021/SR7.

²⁰ CL:AIRE (2009). "The Soil Generic Assessment Criteria for Human Health Risk Assessment."

PAHs^{21,22} and naphthalene the most volatile and soluble²³. The new C4SLs indicate B(a)P as a surrogate marker for carcinogenic PAHs, if it falls within appropriate limits, since the risk from other non-carcinogenic PAHs are considered negligible²⁴. For B(a)P to be used as a surrogate marker it should follow the profile described by the HPA (2008)²⁵ and CL:AIRE (2013). Naphthalene will be treated separately using the LQM S4ULs.

The proposed development is for mixed use residential houses with gardens and apartments with soft landscaping, therefore the assessment criteria for 'residential with plant uptake' and 'residential without plant uptake' has been used where appropriate.

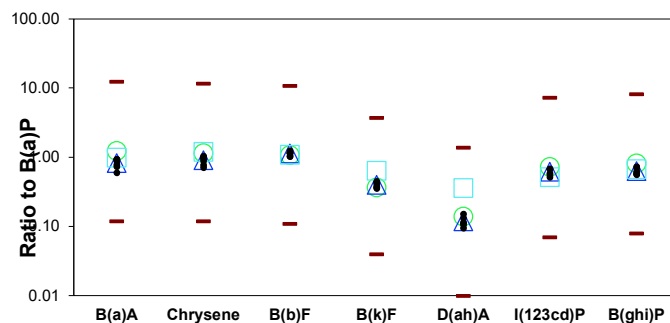
All criteria have been generated using the CLEA V1.06 model²⁶ based either on 1%, 2.5% and 6% Soil Organic matter (SOM). Results will be compared to the nearest appropriate SOM.

A summary of the generic assessment criteria is provided in Appendix F. ATRISK SSVs and CL:AIRE GACs were not required for this dataset and have not been included.

B(a)P as Surrogate Marker

Based on the above assumption for PAHs, LKC undertook an assessment of the data for the site with regards to using B(a)P as a surrogate marker for carcinogenic PAHs as per HPA and CL:AIRE guidelines. The primary toxicological study related to Culp *et al.*²⁷, which was based on coal tar mixtures (>80,000mg/kg of total PAHs) fed in food to mice over a two-year carcinogenicity study.

Graph 6-1 summarises the study site data with respect to how the ratios of carcinogenic PAHs relate to B(a)P, within the confidence limits provided in the HPA document.



Graph 6-1: The ratio of PAH to B(a)P in soil for all available data at the site based on 7 samples (where values were >LOD to allow the calculation of a ratio).

Notes:

B(a)P=Benzo(a)pyrene; D(ah)A=Dibenzo(ah)anthracene; B(a)A=Benzo(a)anthracene; B(b)F=Benzo(b)fluoranthene; B(k)F=Benzo(k)fluoranthene; I(123cd)P=Indeno(123cd)pyrene; B(ghi)P=Benzo(ghi)perylene
●=Ratio to B(a)P for all data; ○=Mean ratio to B(a)P for Culp data; △=Mean ratio to B(a)P from all data at the site
□=Mean ratio to B(a)P for UK data presented by HPA; ■=Upper and Lower limits (order of magnitude from Culp data)

²¹ EA (2002). "Contaminants in Soils: Collation of Toxicological Data and Intake Values for Humans. Benzo[a]pyrene." R&D Publication TOX2.

²² USEPA (1984). "Health Effects Assessment of Polycyclic Aromatic Hydrocarbons (PAHs). EPA 540/1-86-013."

²³ EA (2003). "Review of the Fate and Transport of Selected Contaminants in the Soil Environment." Draft technical report P5- 079/TR1.

²⁴ CL:AIRE (2013). "SP1010: Development of Category 4 Screening Levels and Assessment of Land Affected by Contamination – Final project Report."

²⁵ HPA (2010). "HPA Contaminated Land Information Sheet: Risk Assessment Approaches for Polycyclic Aromatic Hydrocarbons (PAHs)." Version 3.

²⁶ EA (2008). "CLEA Software (Version 1.05) Handbook." Science Report – SC050021/SR4.

²⁷ Culp, S; Gaylor, D; Sheldon, W; Goldstein, L and Beland, F (1998). "A Comparison of Tumours Induced by Coal Tar and Benzo-a-pyrene in a 2-Year Bioassay." Carcinogenesis. **Vol 19**, no. 1, pp. 117-124.

All the data points that could be used to calculate ratios fall inside the upper or lower limits.

Based on this distribution of data LKC considers B(a)P can be used as a surrogate marker for carcinogenic PAHs and the C4SL criteria is suitable for this dataset.

6.2.2 Soil Results Comparison against Assessment Criteria

All analysis sheets are presented in Appendix C.

Results have been compared to the relevant assessment criteria and no elevated contaminants were identified.

No asbestos containing materials were identified in the soil samples tested.

As no significant concentrations of petroleum hydrocarbons were identified in any of the soil samples a hazard index (HI) as described by the Environment Agency²⁸ technical report (to examine the potential additivity of toxicological effects between the petroleum hydrocarbon fractions) has not been undertaken as part of this assessment.

No elevated contaminants or Asbestos Containing Materials were identified.

6.2.3 Direct Contact Risk – Pollutant Linkage 1

As no elevated levels of heavy metals, PAHs and petroleum hydrocarbons were detected and no asbestos fibres identified in any of the soil samples then the probability of these contaminants posing a risk to site users is considered unlikely. A low risk is therefore appropriate and no remediation is required.

6.2.4 Direct Contact Risk – Pollutant Linkage 2

No visual / olfactory evidence of volatile contaminants was identified during the investigation. The PID did not detect any TVOCs. Confirmatory soil analysis did not detect any elevated volatile contaminants.

LKC therefore consider the probability of volatile contaminants affecting site users as unlikely. A low risk is therefore appropriate and no remediation is required.

6.3 Gas Risk Assessment – Pollutant Linkage 3

Previous monitoring did not identify any elevated gas concentrations. The ground investigation did not encounter any significant quantities of putrescible or organic materials. On a qualitative basis a viable source has not been identified. Therefore the probability is considered unlikely and with a severe consequence the risk is moderate/low. A low risk is selected based upon the knowledge of ground conditions and the previous gas monitoring.

6.4 Controlled Water Assessment – Pollutant Linkage 4

The PRA identified a low risk with respect to controlled waters as no significant source of mobile contamination was anticipated. Furthermore, although a Principal Aquifer is present below the site, no abstractions have been identified within influencing distance.

²⁸ EA (2005). "The UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbons in Soils." Science Report P5-080/TR3.

The site investigation did not identify any significant sources of likely mobile contamination within the soils and the underlying Principal Aquifer appears to be protected by a layer of pervasive clay deposits.

This confirms an unlikely probability of onsite contamination affecting controlled waters. With a medium consequence the risk is anticipated to be low and no remediation is required.

6.5 Potable Water Supply - Pollutant Linkage 5

Soil results were compared to United Utilities (UU) guidelines for the selection of potable water pipes in land potentially affected by contamination²⁹. Only contaminants of concern, based on the preliminary conceptual model and ground conditions encountered, were analysed. The following contaminants were not considered to be a risk and therefore not included in the analysis suites: chlorinated compounds, cresols, ethers, nitrobenzene, ketones, aldehydes and amines.

The probability of organic contaminants affecting potable water pipes is unlikely. Given the consequence is considered to be medium, the risk (Pollutant Linkage 5) is anticipated to be low and no remediation (i.e. barrier pipe) is likely to be required.

UU may require a Potable Water Risk Assessment to be carried out prior to the connection of any new water supply. This should be carried out once details of the pipeline location and depths are known.

6.6 Revised Contamination Conceptual Model

The preliminary contamination conceptual model based on previous work (Table 2-2) has been revised following the risk assessments undertaken above. The revised contamination conceptual model follows the same methodology and guidance used in the preliminary contamination conceptual model. The risk matrix is provided in Appendix A.

The revised contamination conceptual model is presented in Table 6-1.

Where a very low risk is identified, no specific remediation is required.

Where a low risk is identified, some form of remediation may be required depending on the pollutant linkage, the type and concentration of contaminants present and the proposed development.

Where a moderate/low risk is identified, an assessment will be undertaken to establish what category the pollutant linkage will fall into.

Where a moderate or higher risk is identified, remediation or further investigation work is recommended.

Further details of the remedial proposals and a remedial option appraisal are given in Section 9.

²⁹ UU(2011). "United Utilities Water Supplementary Guidance for the Selection of Water Pipes in Land Potentially Affected by Contamination."

Pollutant Linkage	Pathway	Receptor	Contaminant	Probability	Consequence	Risk	Assessment
PL1	-Dermal contact. -Inhalation of soil, fibres and dust. -Ingestion of soils, dust, home-grown produce, soil attached to home-grown produce. -Windblown dust.	-Future site users.	- ACM. - Heavy metals. - PAHs. - Petroleum Hydrocarbons.	Unlikely	Medium	Low	-No elevated contaminants identified. -Recommendation: No remediation required.
PL2	-Inhalation of vapours. -Migration through permeable strata and preferential pathways.	-Future site users.	-Volatile Contaminants.	Unlikely	Medium	Low	-No elevated contaminants identified. -Recommendation: No remediation required.
PL3	-Inhalation of gas. -Migration through permeable strata and preferential pathways. -Explosion in confined spaces (methane only).	-Future site users. -Buildings.	- Carbon dioxide - Methane	Unlikely	Severe	Moderate / Low	-No significant source identified following previously investigation and monitoring. Low risk assumed given known ground conditions. -Recommendation: No remediation required.
PL4	-Surface Run-off. -Migration through permeable strata and preferential pathways -Perched waters migration.	-Groundwater (Principal Aquifer).	Mobile contaminants: - Metals - PAHs - Petroleum hydrocarbons.	Unlikely	Medium	Low	-No elevated contaminants identified in the soils. No evidence of mobile contamination observed and clay layer above the aquifer. -Recommendation: No remediation required.
PL5	-Ingestion of tainted water supply.	-Future site users. -Water pipes.	Organic Contaminants: - Naphthalene. - Petroleum hydrocarbons. - Volatile compounds.	Unlikely	Medium	Low	-No elevated contaminants identified. -Recommendation: Barrier piping unlikely to be required. However, this will need to be confirmed once UU risk assessment undertaken.

Table 6-1: Revised Contamination Conceptual Model.

7 Waste Disposal Assessment

The soil contamination results as presented in Appendix C have been used to help determine the waste classification of material for off-site disposal.

As an initial screen the soil results were inputted into HazwasteOnline™. This is a web-based facility that allows an assessment waste as either hazardous or non-hazardous waste based on relevant guidance and legislation^{30, 31, 32, 33, 34, 35, 36, 37, 38}.

HazwasteOnline™. has been designed to cover, amongst other waste types, the European Waste List of Waste (LoW) code number 17 "Construction and Demolition Waste (Including Excavated Soil from Contaminated Sites)".

Where less than limits of detection (LOD) were recorded, the value of the LOD was inputted.

Where applicable, appropriate metal species based on hazard statements/molecular weight, site history, ground conditions and likely species present in soils were used (e.g. metal oxides relating to an ash-based source).

The results show that all the samples tested are classified as NON-HAZARDOUS WASTE and LoW code "17-05-04 - soil and stones other than those mentioned in 17 05 03" is suitable. The HazwasteOnline™ output sheets are provided in Appendix G.

³⁰ EA (2018). "Guidance on the Classification and Assessment of Waste (1st Edition v1.1)". Technical Guidance WM3.

³¹ CLP Regulation - Regulation 1272/2008/EC of 16 December 2008.

³² 1st ATP - Regulation 790/2009/EC of 10 August 2009

³³ Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013

³⁴ WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014

³⁵ Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014

³⁶ 13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

³⁷ POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004

³⁸ 2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

8 Conclusions

Observations and conclusions are contained in Table 8-1 below.

Proposed Development	- The study area in this report comprises six plots (Plots 3-8) which include low rise residential properties (Plots 3, 5, 6 and 7), specialist autism unit comprising 2-storey studio apartments (plot 4); and over-55's apartment block 4-5 storeys).
General Ground conditions / Geotechnical Testing	- Based on investigations by LKC. - Maximum investigation depth 15.50mbgl (B8). - Made Ground to 0.4-2.8mbgl. - Glacial Till CLAY to depths of 4.00mbgl in the centre of site to 8.50mbgl in the east of the site. - Sandstone bedrock encountered at 4.00m in the centre of the site and 8.50mbgl at the eastern boundary of the site. - Perched groundwater encountered between the Made Ground and Glacial Till at 1.00-1.30m in Split Trench ST2. Perched pockets encountered within the Glacial Till at depths of 7.70m and 8.00mbgl in the east of the site in B7 & B8 respectively. - In-situ SPT, HSV and PP tests generally show an increase in strength with depth. - Laboratory TXL tests returned undrained shear strengths ranging between 73 and 152kPa with no discernible increase with depth pattern.
Allowable Bearing Capacity	Based on the s_u of 40kPa at 1m and 60kPa at 2mbgl within the natural Glacial Till. ABCs of strip foundations of 82kN/m² and 123kN/m² at 1m and 2mbgl respectively within the CLAY. 1m² and 2m² pad foundations at 1mbgl returns ABCs of 131 and 189kN respectively. 9.8MPa in the sound sandstone.
Anticipated Foundation Type	Based on anticipated building types at each plot, the following foundation solutions are considered : - Plot 3: Strip foundations. Option for vibro granular columns or mini piles around Trench 3. - Plot 4: required loading to be confirmed. - Plots 5, 6 & 7: shallow strip foundations. - Plot 8: assessment done by others.
Shallow Groundwater	- Shallow groundwater identified on the site was isolated and considered representative of perched pockets between Made Ground and Glacial Till interface, and deeper in the Glacial till near the eastern boundary of the site. Shallow groundwater should not present a constraint to the development.
Concrete Requirements	- Based on BRE Digest 2005³⁹ – DS-3 AC-3 concrete is required across the site. Further testing may allow delineation of areas to allow DS-2/DS1 concrete to be used in suitable areas.
Services	- Services – consideration to the presence of services running through the site. Services may need to re-routed.
Temporary support of excavation	- May be required; however, trial pits were generally recorded as stable.
Plasticity	- Consideration will need to be given to the shrink / swell of the clay strata if it is to be used as founding strata, particularly where trees/hedges are present. Foundations may need to be deepened. A low to medium volume change potential has been calculated for the site.

Table 8-1: Observations and Conclusions Table.

³⁹ BRE (2005). "Concrete in Aggressive Ground." Special Digest 1.

Road / Pavement Design	-A design CBR value of 5% should be adopted for the Made Ground and natural Glacial Till CLAY.
Contamination	No elevated concentrations of contaminants or asbestos containing materials have been identified in the soil samples collected from site by LKC. Similarly no elevated soil, groundwater or gas concentrations were noted in the previous investigations.
Waste Disposal	The HazWasteOnline assessment has classified the soils as Non-Hazardous Waste.

Table 8-1 (continued): Observations and Conclusions Table.

9 Recommendations and Remedial Strategy

The recommendations provided below are considered appropriate for the site based on the site investigation work undertaken. LKC should stress that no remediation, enabling works or designing works should take place until Regulatory approval has been obtained.

9.1 Recommendations

Table 9-1 details the requirements / recommendations.

Requirements / Recommendations	Validation Requirements
<u>Earthworks Inspections / Unexpected Contamination</u> The relevant contractors should be briefed that during development works at the site should any unusual ground conditions and / or visual or olfactory evidence of contamination (including asbestos containing material) be encountered at the site, LKC and the Local Authority should be informed, and further assessment of the material may be required. Should asbestos be identified during groundworks, precautions should be taken to ensure the safety of the construction workers and nearby land users. It would be advisable to introduce an asbestos management strategy in line with CIRIA C733⁴⁰.	Log of work undertaken including photographs. Details of any sampling undertaken and validation of any potential additional remedial work.
<u>Topsoil Growing Medium</u> Although no contamination was identified in the soils on site, the existing made ground is not expected to be a suitable growing medium given the nature of the soil and the undesirable material present (concrete and brick fragments, clinker and timber). A topsoil cover of at least 300mm is recommended in gardens and soft landscaping areas.	Chemical validation of imported soils: See Table 9-2.
<u>Grubbing Out of In-Ground Structures</u> It is recommended that in-ground obstructions are grubbed out as part of the groundworks.	
<u>Health and Safety Considerations</u> In working with, removing or treating any contaminating material it is important that any potential risks associated with the actual site works are mitigated by good environmental management of the site during the remedial phases. Standard health and safety precautions (as per HSE guidance⁴¹) should be adopted by all workers involved with site enabling and construction works.	

Table 9-1: Requirements and recommendations.

⁴⁰ CIRIA (2014). "Asbestos in Soil and Made Ground: A Guide to Understanding and Managing Risks". C733.

⁴¹ HSE (1991). "Protection of Workers and the General Public During Development of Contaminated Land" London HMSO.

Re-use of site won material

To ensure material is compliant with appropriate waste regulations, any site won material re-used onsite should be in recourse to appropriate exemptions. A U1 and T5 exemption should be registered.

This will allow the following to be used onsite or brought in for use onsite (refer to guidance for types of waste that can be used ⁴²):

5,000 tonnes (c. 2,500m³) treatment of crushed concrete / stone.

1,000 tonnes (c. 500m³) use of non-hazardous soil

5,000 tonnes (c. 2,500m³) use of clays, sand, gravel, brick, concrete, stone etc.

50,000 tonnes (c. 25,000m³) use of bituminous material to be used in roadways.

A Materials Management Plan (MMP) with recourse to the CL:AIRE Code of Practice may be required if volumes exceed exemption limits. This must be registered **before** material movement starts onsite.

If an MMP is required, this needs to be registered by a Qualified Person (QP) and there must be 'certainty of use' for any material re-used onsite or exported to site to ensure there is no 'sham recovery'.

For all the above material will need to be tested at the rate and analytical suites presented in Table 9-2.

Table 9-1 (continued): Remediation and validation requirements

9.2 Validation of Subsoil / Topsoil

Chemical validation of all imported soils to be used on site in gardens and soft landscaping areas should be undertaken. Imported soils should be accompanied by a certificate of analysis and source details.

A summary of the required imported material sampling requirements is presented in Table 9-2. Ideally, the material should be sampled at source to prevent double handling if soil fails, with confirmatory sampling undertaken on importation to site. However, where this is not possible then material imported should be segregated based on source and soil type. Validation samples should be taken prior to placement in gardens / soft landscaping to ensure suitability for use.

Material Type	Source	Suite of Analysis	Sampling Rate*
Topsoil / Subsoil	Greenfield	Suite A	1 sample per 50m ³ (min. 3 per source)
	Brownfield / Unknown	Suite B	
Recycled Stone	Any	Suite A	1 sample per 500m ³ (min. 3 per source)
Stone / subsoil	First Generation i.e. quarried sand (subsoil) or stone (break layer)	No testing is required. Certification of material provenance is required.	

Table 9-2: Sampling requirements for imported soils.

Notes:

Suite A - Heavy metals, pH, water soluble sulphate, speciated PAH, soil organic matter and asbestos screen.

Suite B - Heavy metals, pH, water soluble sulphate, speciated PAH, phenol, total and free cyanide, soil organic matter, asbestos screen, banded petroleum hydrocarbons (TPH CWG), BTEX, MTBE.

*Minimum sampling rate of 3 samples per source.

Any soil with visual or olfactory evidence of hydrocarbons should be rejected.

⁴² <https://www.gov.uk/guidance/waste-exemptions-using-waste>

In addition, it should be ensured that the matrix of the topsoil is suitable as a growing medium and no undesirable material is present (in line with BS3882⁴³). LKC advise this information is provided by the supplier before material is imported onto site.

Imported material to be used in gardens will be compared against residential with plant uptake criteria (as used in the contamination risk assessment (Section 6-1)). Appropriate remedial target criteria are presented in Appendix F.

9.3 Site Completion Report

It is recommended that any remediation carried out on the site is validated by a third party and suitable documentary evidence provided in a Site Completion Report, such as photographs, consignment documents and analytical results. This should include as a minimum:

- » Provision of waste transfer documents.
- » Verification testing of all imported soil for garden and soft landscaping areas.
- » Details of any unexpected contamination identified onsite, suitably risk assessed and / or validated.

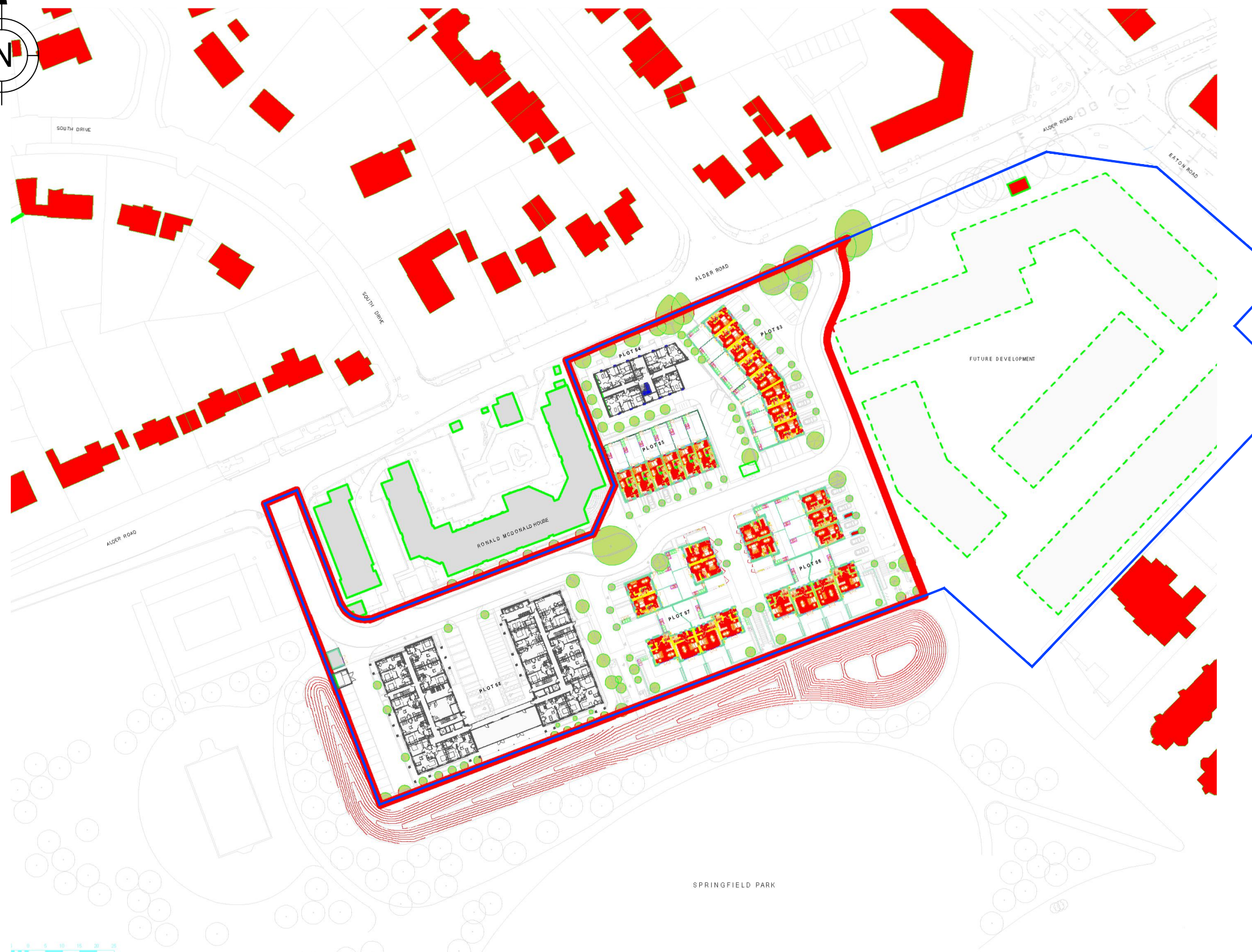
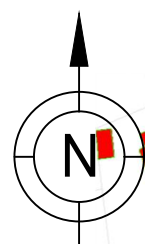
The Site Completion Report will assist the Local Authority in the discharge of any future relevant planning condition and will also be of use to solicitors acting on behalf of any prospective conveyancer who may have concerns over the former use of the site.

⁴³ BS (2015). "Specifications for Topsoil and Requirements for use." BS3882:2015.

Figures



Client: Laidrah Ltd				Title: Study Area Location & Study Area Boundary Plan		LK CONSULT
Site: Alder Hey, Liverpool				Scale (see scale bar): 1:25,000 & 1: 2000 @ A4		
Job No.: LKC 23 1332	Drawn By: RW	Checked By: CC	Drawn: June 2023	Figure: 1	Revision:	



KEY

- Study Area
- Site Area

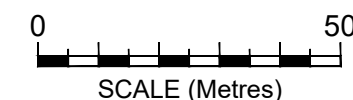
Legend:

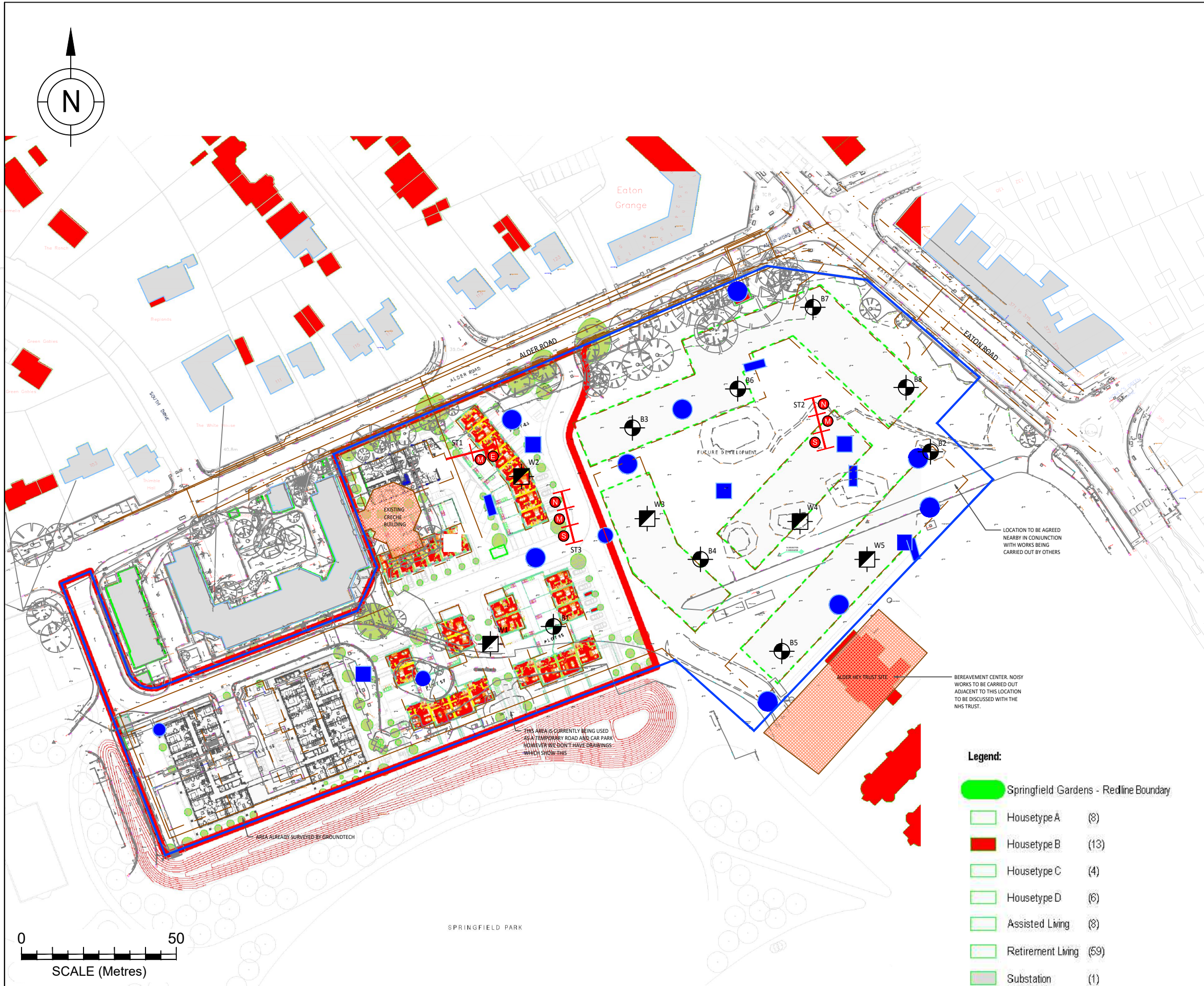
- Springfield Gardens - Redline Boundary
- Housetype A (8)
- Housetype B (13)
- Housetype C (4)
- Housetype D (6)
- Assisted Living (8)
- Retirement Living (59)
- Substation (1)

Sampling Locations and features annotated by LK Consult Ltd are approximate and are based upon observed measurements unless otherwise stated. Do not scale from this drawing and work from marked dimensions only. All dimensions and features should be confirmed on site by the Contractor. Where this drawing includes information provided to LK Consult Ltd by others, LK Consult Ltd gives no warranty, representation or assurance as to the accuracy of such information.



Client:			
Laidrah Ltd			
Site:			
Alder Hey, Liverpool			
Title:			
Proposed Layout Plan			
Job No.:	Scale (See Scale Bar):	Figure:	Revision:
LKC 22 1332	1:1250 @ A3	2	B
Drawn By:	Checked By:	Date:	
AC	RW	Jun 2023	





KEY

Study Area

Site Area

DENOTES PROPOSED BUILDINGS

DENOTES CABLE PERCUSSION BOREHOLE WITH ROTARY FOLLOW-ON TO CIRCA 20m BELOW GROUND LEVEL OR 5.0m INTO BEDROCK

DENOTES WINDOW SAMPLES CIRCA 6m BELOW GROUND LEVEL OR BEDROCK

DENOTES HISTORIC BOREHOLE/WINDOW SAMPLE LOCATIONS

DENOTES HISTORIC TRIAL PIT LOCATIONS

DENOTES EXCAVATION TO CONFIRM OBSTRUCTION REMOVAL (HISTORIC FOUNDATIONS/GAS MAIN), TYPICAL APPROXIMATE LENGTH = 17.0m. EXCAVATION METHOD TO BE ADVISED BY GROUND INVESTIGATION CONTRACTOR.

North (Slip Trench Segmentation)

East (Slip Trench Segmentation)

South (Slip Trench Segmentation)

Middle (Slip Trench Segmentation)

ADDITIONAL MAPPING:

Civic Engineers Limited:
Proposed Ground Investigation Plan,
No.1248-01-CIV-YY-ZZ-DR-S-0002,
Rev:P01 (15/07/2022)

Sampling Locations and features annotated by LK Consult Ltd are approximate and are based upon observed measurements unless otherwise stated. Do not scale from this drawing and work from marked dimensions only. All dimensions and features should be confirmed on site by the Contractor. Where this drawing includes information provided to LK Consult Ltd by others, LK Consult Ltd gives no warranty, representation or assurance as to the accuracy of such information.

LK
CONSULT LIMITED

Client:

Laidrah Ltd

Site:

Alder Hey, Liverpool

Title:

Sampling Location Plan

Job No.:

LKC 22 1332

Scale (See Scale Bar):

1:1250 @ A3

Figure:

3

Revision:

E

Drawn By:

AC

Checked By:

RW

Drawn:

Jun 2023

Extract from: BDP

Drawing Ref: Level 00 Masterplan, No.-7459-BDP-XX-00-PL-A-0000, Rev:P7 (30/05/2023)

Appendix A

Risk Matrix

Risk Evaluation

The method for risk evaluation is a qualitative method of interpreting the output from the risk estimation stage of the assessment, based on CIRIA 55244. It involves the classification of the:

- » Magnitude of the potential consequence (severity) of the risk occurring (Table A).
- » Magnitude of the probability (likelihood) of the risk occurring (Table B).

Consequence (Severity)		
Classification	Definition	Example
Severe	- Short term (acute) risk to human health likely to results in 'significant harm' as defined by the Environment Protection Act 1990, Part IIA. Short term risk of pollution (note: Water Resources Act contains no scope for considering significance of pollution) of sensitive water resource. Catastrophic damage to buildings/properties. A short term risk to a particular ecosystem, or organism forming part of such ecosystem (note: the definition of ecological systems within the Draft Circular on Contaminated Land, DETR, 2000).	High concentrations of cyanide on the surface of an informal recreation area. Major spillage of contaminants from site into controlled waters. Explosion, causing building collapse (can also equate to short term human health risk if buildings are occupied).
Medium	Chronic damage to Human Health ('significant harm' as defined in DETR, 2000). Pollution of sensitive water resources (note Water Resources Act contains no scope for considering significance of pollution). A significant change in a particular ecosystem, or organism forming part of such ecosystem.	Concentrations of a contaminant from site exceed generic, or site specific assessment criteria. Leaching of contaminants from a site to a major or minor aquifer (Principal and Secondary). Death of a species within a designated nature reserve.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm' as defined in DETR, 2000). Damage to sensitive buildings / structures / services or the environment.	Pollution of non-classified groundwater. Damage to building rendering it unsafe to occupy (e.g. foundation damage resulting in instability).
Minor	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc.). Easily repairable damage to buildings, structures and services.	The presence of contaminants at such concentrations that protective equipment is required during site works. The loss of plants in a landscaping scheme. Discoloration of concrete.

Table A: Classification of consequence.

Probability (Likelihood)	
Classification	Definition
High likelihood	There is a pollutant linkage and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.
Likely	There is a pollutant linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.
Low likelihood	There is a pollutant linkage and circumstances are possible under which an event could occur. However it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term.

⁴⁴ CIRIA (2001). "Contaminated Land Risk Assessment: A Guide to Good Practice". C552.

Unlikely	There is a pollutant linkage but circumstances are such that it is improbable that an event would occur in the very long term.
-----------------	--

Table B: Classification of probability.

These classifications are then compared to indicate the risk presented by each pollutant linkage (Table C). It is important that this classification is only applied where there is a possibility (which can range from high likelihood to unlikely) of a pollutant linkage existing.

		Consequence			
		Severe	Medium	Mild	Minor
Probability	High likelihood	Very High Risk	High Risk	Moderate Risk	Moderate / Low Risk
	Likely	High Risk	Moderate Risk	Moderate / Low Risk	Low Risk
	Low likelihood	Moderate Risk	Moderate / Low Risk	Low Risk	Very Low Risk
	Unlikely	Moderate / Low Risk	Low Risk	Very Low Risk	Very Low Risk

Table C: Comparison of consequence against probability.

Once the risk has been determined the corresponding action can be assessed (Table D).

Risk	Action Required
Very High Risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not already undertaken) and remediation are likely to be required.
High Risk	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the longer term.
Moderate Risk	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.
Low Risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very Low Risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.

Table D: Description of the classification and likely action required.

Where LKC identified a low to very low risk either limited intrusive investigation work, a watching brief (during construction work) or no investigation work will be recommended. This will be dependent on the nature of the site and the proposed development.

Where the risk falls into the moderate/low risk, LKC will undertake an assessment to establish what category the pollutant linkage will fall into (i.e. moderate or low risk will be chosen).

Where LKC identifies a moderate or higher risk intrusive work or precautionary remedial measures will be recommended.

Appendix B

Profile Logs

Boring Method Cable percussive to 5.40mbgl. Rotary core to 10.50mbgl.			Casing Diameter		Ground Level (mOD) 40.02		Client Laidrah Ltd		Job Number LKC 22 1332		
											Location (Handheld GPS) 340343 E 391914 N
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr	
0.00-0.40	ES PID=0.3ppm					39.62	(0.40)	MADE GROUND: Dark brown very gravelly sandy CLAY with frequent brick fragments, concrete fragments and ash. Sand is fine to coarse. Gravel is fine to medium, subangular comprising mudstone and sandstone.			
0.50-0.80	B						0.40	Stiff to very stiff consistency brown gravelly sandy CLAY with occasional rootlets. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising mudstone and sandstone.			
1.25-1.65	U										
1.70	D										
2.20-2.65 2.20-2.65	SPT N=22 S			4,5/5,5,6,6			(3.70)		Very stiff consistency from below 2.3mbgl.		
3.20-3.65	U							Red SANDSTONE recovered as sandy gravel. Sand is fine to coarse. Gravel is fine to medium.			
3.70 3.70-4.00 4.20-4.40 4.20-4.42	D B S			10, 15/36, 14 50/95 SPT 25*/125		35.92	4.10				
4.50	TCR	SCR	RQD	If			(1.30)				
5.30-5.40				25/50 50/50 SPT 25*/50 Extremely closely spaced, subhorizontal sand infilled fractures, planar rough.							
5.30-5.40 5.50				S Extremely close to close spaced, subhorizontal sand infilled, undulating smooth to planar smooth.		34.62	5.40	NO RECOVERY.			
6.50	85	71	31	Av:90 Min:NI Max:140				NI between 6.20-6.25mbgl.			
7.50				Av:120 Min:NI Max:180			(2.40)				
8.50	97	67	25	Av:10 Min:NI Max:70		32.22	7.80	Medium strength red fine to medium grained thinly bedded SANDSTONE.			
							(1.90)	Medium strength brown fine to medium thickly laminated SANDSTONE between 8.10-8.20mbgl.			
9.50				Av:70. 10 Min:90				Medium strength brown fine to medium thickly laminated SANDSTONE between 8.70-8.80mbgl.			
						30.32	9.70	Weak to medium strong red fine to medium grained thickly bedded to thickly laminated SANDSTONE			
Remarks NI=Not intact. Grid reference and elevation taken from GPS survey. Borehole was dry and stable. Chiselling from 4.10m to 5.30m for 1 hr hour.									Scale (approx) 1:50	Logged By RW	
									Figure No. LKC 22 1332.B1		

Boring Method Cable percussive to 5.40mbgl. Rotary core to 10.50mbgl.	Casing Diameter	Ground Level (mOD) 40.02	Client Laidrah Ltd	Job Number LKC 22 1332
	Location (Handheld GPS) 340343 E 391914 N	Dates 28/07/2022- 03/08/2022	Engineer LKC	Sheet 2/2

Depth (m)	TCR (%)	SCR (%)	RQD (%)	I _f (mm)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
10.50				Av:80 Min:20 Max:140		29.52	(0.80) 10.50	with occasional bands of geotite. Strata noted to be wet.			
								Complete at 10.50m			

Remarks

Remarks
NI=Not intact.
Grid reference and elevation taken from GPS survey.
Borehole was dry and stable.

Scale (approx)

1:50

Logged
By

RW

Figure No.

LKC 22 1332.B1

Boring Method

Cable percussive to 9.07mbgl.

Casing Diameter
Ground Level (mOD)

36.43

Client

Laidrah Ltd

**Job
Number**

LKC 22 1332

Location (Handheld GPS)

340470 E 391962 N

Dates

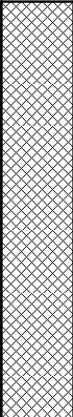
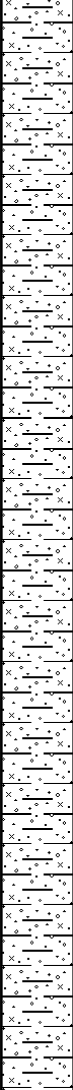
26/07/2022

Engineer

LKC

Sheet

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Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.70-1.70	ES PID=0.3ppm						MADE GROUND: Dark brown sandy clayey GRAVEL predominantly brick fragments, concrete fragments, tarmacadam fragments with occasional ash and timber. Sand is fine to coarse. Gravel is fine to coarse, subangular.		
1.20-1.65 1.20-1.65	SPT N=8 S			1,2/2,2,2,2		(2.20)			
2.20-2.65 2.20-2.65	SPT N=19 S			3,4/4,5,5,5	34.23	2.20	Firm to stiff consistency reddish brown slightly gravelly slightly sandy silty CLAY. Sand is fine to coarse. Gravel is fine, subangular comprising mudstone and sandstone.		
2.70-3.00	B PP= 122.65kPa						Stiff consistency high strength clay from below 2.7mbgl.		
3.30-3.75 3.30-3.75	SPT N=21 S			4,4/5,5,5,6					
4.30-4.75	U								
4.80	D					(5.90)			
5.50-5.95 5.50-5.95	SPT N=26 S			4,5/5,7,7,7					
7.00-7.45	U								
7.50	D								

Remarks

Rotary borehole drilled adjacent to borehole see seperate sheet (ref. RB2) for installations.
Borehole was stable.
Grid reference and elevation taken from GPS survey.
Installed with 1.0mbgl as plain pipe and to 10.0mbgl slotted pipe.

**Scale
(approx)**

1:40

**Logged
By**

RW

Figure No.

LKC 22 1332.B2



LK CONSULT LTD

Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS
Tel: 0161 763 7200 web: www.thelkgroup.com

Site

Alder Hey, Liverpool

**Borehole
Number**

B2

Boring Method

Cable percussive to 9.07mbgl.

Casing Diameter

Ground Level (mOD)

36.43

Client

Laidrah Ltd

**Job
Number**

LKC 22 1332

Location (Handheld GPS)

340470 E 391962 N

Dates

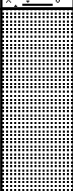
26/07/2022

Engineer

LKC

Sheet

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Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
8.20-8.30	SPT 25*/60 50/40 S			25/50	28.33	8.10	Red SANDSTONE recovered as sandy gravel. Sand is fine to coarse. Gravel is fine to medium.		
8.20-8.30						(0.97)			
8.70	D								
9.00-9.07	SPT 25*/40 50/30 S			25/50	27.36	9.07	Complete at 9.07m		
9.00-9.10									

Remarks

Rotary borehole drilled adjacent to borehole see seperate sheet (ref. RB2) for installations.
Borehole was stable.
Grid reference and elevation taken from GPS survey.
Installed with 1.0mbgl as plain pipe and to 10.0mbgl slotted pipe.

**Scale
(approx)**

1:40

**Logged
By**

RW

Figure No.

LKC 22 1332.B2

Boring Method

Cable percussive to 6.76mbgl.
Rotary cored to 12.00mbgl.

Casing Diameter
Ground Level (mOD)

38.73

Client

Laidrah Ltd

**Job
Number**

LKC 22 1332

Location (Handheld GPS)

340368 E 391978 N

Dates

01/08/2022

Engineer

LKC

Sheet

1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.80	ES PID=0.3ppm						MADE GROUND: Dark brown sandy clayey GRAVEL predominantly concrete fragments and sandstone with occasional ash, taramacdam, brick and slate. Sand is fine to coarse. Gravel is fine to medium, subangular.			
1.00	D					(1.20)				
1.20-1.65	SPT N=7			1,1/1,2,2,2	37.53	1.20	Firm to stiff consistency brownish grey slightly gravelly slightly sandy silty CLAY. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising mudstone and sandstone.			
1.70-2.00	B									
2.20-2.65	U						Stiff consistency from below 2.1mbgl.			
2.70	D									
2.70-3.00	B									
3.20-3.65	SPT N=20			1,2/4,4,5,7		(4.20)				
3.20-3.65	S									
4.20-4.65	U									
4.70	D									
5.30-5.64	SPT 50/190			4,3/3,19,28	33.33	5.40	Red weathered SANDSTONE recovered as sandy gravel.			
5.30-5.65	S									
6.00	TCR	SCR	RQD	FI						
6.40-6.45				D		(1.36)				
6.00				S						
6.40-6.76				25/50						
				SPT 25*/30						
				50/330						
				Av:50	31.97	6.76	Weak red fine to medium grained thickly bedded red SANDSTONE NI.			
				Min:NI	31.93	6.80				
				Max:90						
7.00	84	78	64	Closely spaced subhorizontal open and sand infilled fractures, planar rough to planar smooth.		(1.90)	Medium strong red fine to medium grained thickly bedded red SANDSTONE with rare geotite. Medium strong yellowish brown fine to medium grained thickly laminated SANDSTONE between 7.20-7.30mbgl.			
8.00				Medium to extremely close spaced subhorizontal open and clayey sand infilled fractures, planar rough to planar smooth.	30.03	8.70				
				Medium to closely spaced subhorizontal to subvertical open and sand infilled fractures, planar smooth.	29.83	(0.20)	Medium strong yellowish brown fine to medium thickly laminated SANDSTONE with frequent geotite.			
9.00					29.43	(0.40)	NO RECOVERY. Medium strong red fine to medium grained thickly bedded SANDSTONE between 8.90-9.0mbgl.			
10.00						9.30	Medium strong red fine to medium grained thickly			

Remarks

NI=Not intact.
Borehole was dry and stable.
Grid reference and elevation taken from GPS survey.
Chiselling from 5.50m to 6.40m for 1 hour.

Scale (approx)

1:50

Logged By

RW

Figure No.

LKC 22 1332.B3

**LK CONSULT LTD**Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS
Tel: 0161 763 7200 web: www.thelkgroup.com**Site**

Alder Hey, Liverpool

**Borehole
Number****B3****Boring Method**Cable percussive to 6.76mbgl.
Rotary cored to 12.00mbgl.**Casing Diameter****Ground Level (mOD)**

38.73

Client

Laidrah Ltd

**Job
Number**

LKC 22 1332

Location (Handheld GPS)

340368 E 391978 N

Dates

01/08/2022

Engineer

LKC

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Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
11.00	90	86	34	Av:70 Min:NI Max:240	Close to extremely close spaced subhorizontal open to tight, some sand infilled fractures, planar smooth to planar striated.		(2.70)	bedded SANDSTONE. Weak yellowish brown fine to medium grained thickly laminated SANDSTONE with frequent geotite between 9.70-9.80mbgl. Weak red fine to medium grained thickly laminated SANDSTONE between 10.50-10.60mbgl.			
12.00				Av:80 Min:5 Max:190	Medium to extremely close spaced subhorizontal open and sand infilled fractures, planar smooth to planar rough. Medium to closely spaced subhorizontal open to tight, sand infilled fractures, planar rough to planar smooth.	26.73	12.00	Complete at 12.00m			

RemarksNI=Not intact.
Borehole was dry and stable.
Grid reference and elevation taken from GPS survey.**Scale
(approx)**

1:50

**Logged
By**

RW

Figure No.

LKC 22 1332.B3

Boring Method

Cable percussive to 6.70mbgl.
Rotary cored to 11.50mbgl.

Casing Diameter
Ground Level (mOD)

36.43

Client

Laidrah Ltd

**Job
Number**

LKC 22 1332

Location (Handheld GPS)

340390 E 391936 N

Dates

27/07/2022-
04/08/2022

Engineer

LKC

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Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.20	D					(0.70)	MADE GROUND: Dark brown gravelly very sandy CLAY with frequent brick, rare concrete. Sand is fine to coarse. Gravel is fine to coarse, subangular comprising sandstone.			
0.80	D				35.73	0.70	Firm to stiff consistency brown gravelly sandy silty CLAY. Sand is fine to coarse. Gravel is fine, subangular comprising mudstone and sandstone. Becoming stiff from below 2.2mbgl.			
1.20-1.65 1.20-1.60	SPT N=10 S			2,2/2,2,3,3						
1.70-2.00	B									
2.20 2.20-2.65	D U						Stiff consistency from below 2.2mbgl.			
2.70-3.00	B									
3.30-3.75 3.30-3.75	SPT N=24 S			3,5/5,6,6,7		(4.80)				
4.40-4.95 4.50-4.95	S SPT N=29			5,6/7,7,7,8						
5.30-5.47 5.20-5.65	S			25/32,18 SPT 25*/70 50/95						
5.50	TCR	SCR	RQD	Ir	30.93	5.50	Red SANDSTONE recovered as sandy gravel. Sand is fine to coarse. Gravel is fine to medium.			
6.00				D		(1.20)				
6.60-6.70 6.50 6.60-6.70				25/50 SPT 25*/60 50/40 S	29.73	6.70	Medium strong red fine to medium grained thickly bedded slightly micaceous SANDSTONE.			
7.50	84	72	52	Av:70 Min:20 Max:180		(1.80)				
				Av:140 Min:3 Max:180	27.93	8.50	NO RECOVERY.			
8.50				Av:NI Min:5 Max:60		(0.90)				
9.50				Limited recovery.	27.03	9.40	Medium strong red fine to medium grained thickly bedded slightly micaceous SANDSTONE. Medium strong red fine to coarse grained thickly bedded SANDSTONE between			

Remarks

NI=Not intact.
Rotary started from 5.50mbgl limited recovery to 6.0mbgl.
Borehole was dry and stable.
Grid reference and elevation taken from GPS survey.
Cable drilling to 6.70mbgl.
Chiselling from 5.50m to 6.60m for 1 hr hour.

**Scale
(approx)**

1:50

**Logged
By**

RW

Figure No.

LKC 22 1332.B4

Boring Method

Cable percussive to 6.70mbgl.
Rotary cored to 11.50mbgl.

Casing Diameter
Ground Level (mOD)

36.43

Client

Laidrah Ltd

**Job
Number**

LKC 22 1332

Location (Handheld GPS)

340390 E 391936 N

Dates

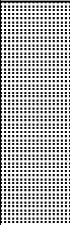
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Engineer

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Depth (m)	TCR (%)	SCR (%)	RQD (%)	I _f (mm)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
10.50	69	63	32	Av:80 Min:10 Max:120	Medium to closely spaced, subhorizontal open clean and some sand infilled fractures, planar smooth.	24.93	(2.10)	9.40-9.50mbgl. Very weak yellow fine to medium grained thinly bedded SANDSTONE with occasional mudstone clasts between 10.20-10.30mbgl.			
11.50				Av:100 Min:22 Max:300			11.50	Complete at 11.50m			

Remarks

NI=Not intact.
Rotary started from 5.50mbgl limited recovery to 6.0mbgl.
Borehole was dry and stable.
Grid reference and elevation taken from GPS survey.
Cable drilling to 6.70mbgl.

**Scale
(approx)**

1:50

**Logged
By**

RW

Figure No.

LKC 22 1332.B4

Boring Method

Cable Percussion

Casing Diameter
Ground Level (mOD)

38.72

Client

Laidrah Ltd

**Job
Number**

LKC 22 1332

Location (Handheld GPS)

340417 E 391906 N

Dates

28/07/2022

Engineer

LKC

Sheet

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Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-1.40	ES PID=0.1ppm					(1.00)	MADE GROUND: Dark brown very gravelly sandy CLAY with frequent brick, rare concrete. Sand is fine to coarse. Gravel is fine to coarse, subangular comprising sandstone.			
1.20-1.65	SPT N=7 S			1,2/2,1,2,2	37.72	1.00	MADE GROUND: Firm consistency brown very gravelly very sandy CLAY with frequent ash. Sand is fine to coarse. Gravel is fine to coarse, subangular comprising sandstone.			
2.20-2.65	SPT N=4 S			1,1/1,1,1,1		(1.80)				
2.90-3.20	B				35.92	2.80	Stiff consistency brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising mudstone and sandstone.			
3.20-3.65	U					(1.50)				
3.70	D									
4.30-4.75	SPT N=34 S			5,6/10,10,7,7	34.42	4.30	Dense reddish brown slightly clayey gravelly SAND. Sand is fine to coarse. Gravel is fine to medium, subrounded comprising mixed lithologies.			
4.90	D				33.72	5.00	Stiff consistency reddish brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising mudstone and sandstone.			
5.10	D					(1.20)				
5.40-5.85	SPT N=28 S			3,6/7,7,7,7						
6.20-6.36	SPT 25*/70 50/85 S			25/38,12	32.52	6.20	Red SANDSTONE recovered as sandy gravel. Sand is fine to coarse. Gravel is fine to medium.			
6.20-6.35						(1.15)				
6.70	D									
7.20-7.30	S 50/80 SPT 5*/70			5/50						
7.20-7.35	TCR	SCR	RQD	FI	31.37	7.35	NO RECOVERY.			
7.50										

Remarks

Grid reference and elevation taken from GPS survey.
Borehole was dry and stable.
NI=Not intact.
Chiselling from 6.20m to 7.00m for 1 hr hour.

**Scale
(approx)**

1:40

**Logged
By**

RW

Figure No.

LKC 22 1332.B5

Machine : Flush : Core Dia : mm Method : Cable percussive followed by rotary core.			Casing Diameter			Ground Level (mOD) 38.72		Client Laidrah Ltd			Job Number LKC 22 1332
			Location (Handheld GPS) 340417 E 391906 N			Dates 28/07/2022		Engineer LKC			Sheet 2/2

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
8.50				NR			(1.55)				
	53	43	35	Av:35 Min:20 Max:150		29.82	8.90	Medium strong to strong red fine to medium grained thickly bedded slightly micaceous SANDSTONE. Weak reddish brown fine to medium grained SANDSTONE (NI) between 8.90mbgl-9.00mbgl.			
9.50				Av:130 Min:10 Max:220	Extremely closely to medium spaced subhorizontal open clean and sand infilled fractures, planar smooth to planar striated.			Significant subvertical fracture between 9.50mbgl-9.65mbgl.			
							(3.10)	Medium strong red fine to coarse grained SANDSTONE between 10.50mbgl-11.00mbgl.			
10.50				Av:5 Min:3 Max:7	Closely to medium spaced subhorizontal open clean and sand infilled fractures, planar smooth.			Significant subvertical fracture between 11.30mbgl-11.45mbgl.			
11.50											
	90	67	32	Av:110 Min:5 Max:190	Closely to medium spaced subhorizontal open clean and sand infilled fractures, planar smooth to planar rough.	26.72	12.00	Weak yellowish brown fine to medium grained thinly laminated highly micaceous SANDSTONE.			
12.50							(0.70)				
				Av:90 Min:25 Max:200	Extremely closely to medium spaced subhorizontal open clean and sand infilled fractures, planar smooth to planar rough.	26.02	12.70	Medium strong to strong red fine to medium grained thickly bedded slightly micaceous SANDSTONE with rare mudstone clasts. Weak to medium strong brown thinly laminated fine to medium grained SANDSTONE from 12.90mbgl-13.00mbgl.			
13.50					Medium spaced subhorizontal open clean and sand infilled fractures, planar smooth.	25.22	13.50	Complete at 13.50m			

Remarks

Grid reference and elevation taken from GPS survey.
Borehole was dry and stable.
NI=Not intact.

Scale (approx)

1:40

Logged By

RW

Figure No.

LKC 22 1332.B5

Boring Method

Cable percussive to 9.07mbgl.
Rotary cored to 13.50mbgl.

Casing Diameter
Ground Level (mOD)

37.41

Client

Laidrah Ltd

**Job
Number**

LKC 22 1332

Location (Handheld GPS)

340402 E 391991 N

Dates

26/07/2022-
02/08/2022

Engineer

LKC

Sheet

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Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-1.10	ES PID=0.4ppm					(1.30)	MADE GROUND: Dark brown very sandy silty GRAVEL predominantly concrete and ash with frequent brick fragments, tarmacadam fragments and rare pottery. Sand is fine to coarse. Gravel is fine to medium, subangular.			
1.20-1.65 1.20-1.65	SPT N=11 S			1,2/2,2,3,4	36.11	1.30	Firm consistency medium to high strength reddish brown slightly gravelly sandy silty CLAY with sand content increasing with depth. Sand is fine to coarse. Gravel is fine, subangular comprising mudstone and sandstone.			
1.70-2.00	B PP=50.28kPa									
2.20-2.65	U									
2.70 2.70-3.00	D B PP=98.1kPa						Stiff consistency high strength clay from below 2.7mbgl.			
3.30-3.75 3.30-3.75	SPT N=20 S			2,4/4,5,5,6		(5.30)				
4.40-4.85 4.40-4.95	SPT N=22 S			3,4/5,5,6,6						
5.50-5.95	U									
6.00	D									
6.70-7.13 6.70-7.10	SPT 50/280 S			12,12/12,14,16,8	30.81	6.60	Red SANDSTONE recovered as sandy gravel. Sand is fine to coarse. Gravel is fine to medium.			
7.50	TCR	SCR	RQD	FI	D					
7.50										
8.00-8.63 8.00-8.10				25/50 SPT 50/30 S		(2.47)				
8.50				25/50 SPT 25*/40 50/30						
9.00-9.07	53	45	17	Av:80 Min:70 Max:90	28.34	9.07				
				Extremely close to close spacing, subhorizontal clean and sand infilled fractures, planar rough to planar smooth.	28.01	(0.33)	NO/LIMITED RECOVERY.			
9.50						9.40	Medium strong red fine to medium grained thickly bedded SANDSTONE. Medium strong yellowish brown fine to medium grained thickly laminated SANDSTONE with			

Remarks

NI=Not intact.
Grid reference and elevation taken from GPS survey.
Borehole was stable.

**Scale
(approx)**

1:50

**Logged
By**

RW

Figure No.

LKC 22 1332.B6

Boring Method

Cable percussive to 9.07mbgl.
Rotary cored to 13.50mbgl.

Casing Diameter
Ground Level (mOD)

37.41

Client

Laidrah Ltd

**Job
Number**

LKC 22 1332

Location (Handheld GPS)

340402 E 391991 N

Dates

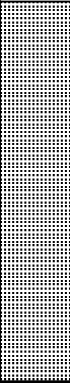
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Engineer

LKC

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Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
10.50				Av:70 Min:30 Max:130	Close to medium spacing, subhorizontal open clean and clay infilled fractures, planar rough to planar smooth.			occasional geotite between 9.70-9.90mbgl.			
11.50	93	65	41	Av:50 Min:6 Max:130			(3.10)	Weak yellow brown fine to medium grained thickly laminated highly micaceous SANDSTONE between 10.80-10.90mbgl.			
12.50				Av:70 Min:5 Max:190		24.91	12.50	Extremely weak red fine to medium grained thickly bedded SANDSTONE (NI) between 11.70-11.75mbgl.			
13.50				Av:40 Min:30 Max:370		23.91	13.50	Medium strong red fine to coarse grained thickly bedded SANDSTONE. Significant vertical fracture between 12.60-12.70mbgl.			
								Complete at 13.50m			

Remarks

NI=Not intact.
Grid reference and elevation taken from GPS survey.
Borehole was stable.

**Scale
(approx)**

1:50

**Logged
By**

RW

Figure No.

LKC 22 1332.B6

Boring Method

Cable percussion drilling to
8.970mbgl.
Rotary cored to 14.0mbgl.

Casing Diameter
Ground Level (mOD)

36.94

Client

Laidrah Ltd

**Job
Number**

LKC 22 1332

Location (Handheld GPS)

340427 E 392017 N

Dates

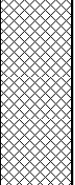
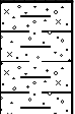
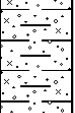
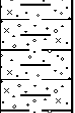
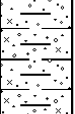
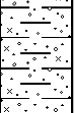
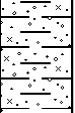
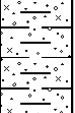
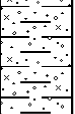
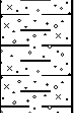
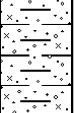
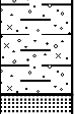
25/07/2022-
02/08/2022

Engineer

LKC

Sheet

1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.10-0.20 0.20-1.00	D D					(1.30)	MADE GROUND: Soft consistency brown very gravelly sandy silty CLAY with frequent brick fragments, concrete fragments and occasional ash. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded comprising sandstone and mudstone. Strata noted to be dry.			
1.20-1.65 1.20-1.65	SPT N=16 S			4,5/4,4,4,4	35.64	1.30	Firm to stiff consistency reddish brown slightly gravelly slightly sandy silty CLAY. Sand is fine to coarse. Gravel is fine, subangular comprising mudstone and sandstone. Firm consistency low strength clay from 1.7mbgl.			
1.70-2.00	B PP=30.66kPa									
2.20-2.65	U									
2.70 2.70-3.00	D B PP=64.38kPa						Stiff consistency medium strength clay from 2.7mbgl.			
3.30-3.75 3.30-3.95	SPT N=21 S			3,4/5,5,3,8						
4.50-4.95	U					(6.40)				
5.00	D									
5.30-5.95	S									
5.50-5.95	SPT N=24			4,5/5,6,6,7						
7.00-7.45	U									
7.50	D			Fast(1) at 7.70m, rose to 6.70m in 20 mins.						
7.80-7.99 8.00	SPT 25*/145 50/40			25/50	29.24	7.70	Red weathered SANDSTONE recovered as sandy gravel. Sand is fine to coarse. Gravel is fine to medium.			

Remarks

Grid reference and elevation taken from GPS survey.
Borehole was stable.
NI= Not intact.
Chiselling from 7.70m to 9.80m for 1 hour.

**Scale
(approx)**

1:40

**Logged
By**

RW

Figure No.

LKC 22 1332.B7

Boring Method

Cable percussion drilling to
8.970mbgl.
Rotary cored to 14.0mbgl.

Casing Diameter
Ground Level (mOD)

36.94

Client

Laidrah Ltd

**Job
Number**

LKC 22 1332

Location (Handheld GPS)

340427 E 392017 N

Dates

25/07/2022-
02/08/2022

Engineer

LKC

Sheet

2/2

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
7.80-7.90					S		(1.27)				
8.90-8.97				Av:60 Min:30 Max:200	25/50 SPT 25*/40 50/30	27.97	8.97	Medium strong red fine to medium grained thickly bedded SANDSTONE.			
9.00	83	76	50	Av:150 Min:50 Max:230		26.99	(0.98)				
10.00				Av:70 Min:10 Max:140	Medium to closely spaced subhorizontal open to tight sand infilled fractures, planar smooth to undulating smooth.	25.94	9.95	NO RECOVERY. Medium strong light brown fine to medium grained thickly laminated SANDSTONE.			
11.00				Av:80 Min:NI Max:100			11.00	Medium strong red fine to coarse thickly laminated to thickly bedded SANDSTONE. Weak red fine to medium grained thickly bedded SANDSTONE between 11.10-11.20mbgl.			
12.00	79	66	32	Av:110 Min:20 Max:200			(2.20)	Medium strong light brown fine to medium grained thickly laminated SANDSTONE between 11.60-11.80mbgl.			
13.00				Av:40 Min:35 Max:70		23.74	13.20	NO RECOVERY.			
							(0.80)				
14.00					Extremely close to closely spaced subhorizontal open fractures, planar smooth to planar rough.	22.94	14.00	Complete at 14.00m			

Remarks

Grid reference and elevation taken from GPS survey.
Borehole was stable.
NI= Not intact.

**Scale
(approx)**

1:40

**Logged
By**

RW

Figure No.

LKC 22 1332.B7

Boring Method

Cable Percussion

Casing Diameter
Ground Level (mOD)

36.84

Client

Laidrah Ltd

**Job
Number**

LKC 22 1332

Location (Handheld GPS)

340457 E 391991 N

Dates

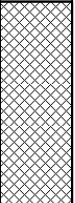
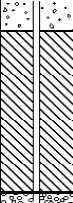
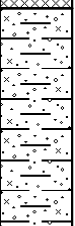
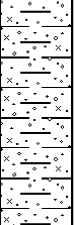
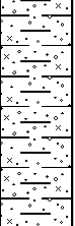
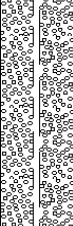
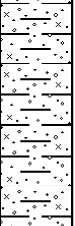
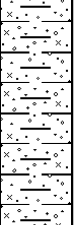
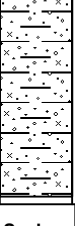
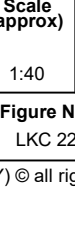
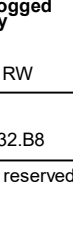
25/07/2022-
26/07/2022

Engineer

LKC

Sheet

1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.50-0.90	ES PID=0.1ppm					(1.10)	MADEGROUND: Soft consistency brown very gravelly sandy silty CLAY with frequent brick fragments, concrete fragments, occasional ash and pottery. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded comprising sandstone and mudstone. Strata noted to be dry.			
1.20-1.65 1.20-1.65	SPT N=6 S			1,2/2,1,1,2	35.74	1.10	Firm to stiff consistency reddish brown slightly gravelly slightly sandy silty CLAY. Sand is fine to coarse. Gravel is fine, subangular comprising mudstone and sandstone.			
2.00 2.20-2.65 2.20-2.65	D SPT 20/200 S			3,3/4,5,5,6			Becoming stiff from below 2.3mbgl.			
2.70-3.00	B PP= 104.64kPa						Stiff consistency high strength clay from below 2.7mbgl.			
3.30-3.75	U									
3.80	D									
4.30-4.75 4.30-4.75	SPT N=22 S			3,4/5,5,6,6		(7.40)				
5.40-5.85	U									
5.90	D									
7.00-7.45 7.00-7.45	SPT N=23 S			4,5/6,5,6,6						

Remarks

NI=Not intact.
Borehole was stable.
Grid reference and elevation taken from GPS survey.

**Scale
(approx)**

1:40

**Logged
By**

RW

Figure No.

LKC 22 1332.B8

**LK CONSULT LTD**Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS
Tel: 0161 763 7200 web: www.thelkgroup.com**Site**

Alder Hey, Liverpool

**Borehole
Number****RB2****Machine :****Flush :****Core Dia :** mm**Method :** Rotary Cored**Casing Diameter****Ground Level (mOD)**

36.43

Client

Laidrah Ltd

**Job
Number**

LKC 22 1332

Location (Handheld GPS)

340470 E 391962 N

Dates

02/08/2022

Engineer

LKC

Sheet

1/2

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
7.50	86	46	22	Av:35 Min:25 Max:110	Extremely close to close subhorizontal to subvertical open fractures, planar smooth to planar rough. Medium to closely spaced open fractures, planar smooth.	28.14 28.13	8.29 8.30	See adjacent cable percussive log ref. B2.			
8.00	82	78	24	Av:90 Min:15 Max:110							
8.50	98	98	78	Av:100 Min:15 Max:170				Medium strong light brown fine to medium grained thickly bedded slightly micaceous SANDSTONE.			
9.00	70	60	20	Av:50 Min:NI Max:100				Medium strong red fine to medium grained thinly to thickly bedded SANDSTONE with rare mudstone clasts. Weak red fine to medium thickly bedded SANDSTONE (NI) between 9.00-9.10mbgl.			
9.50								No recovery between 9.60-9.70mbgl. Strata noted to be wet between 9.70-10.40mbgl.			

RemarksGrid reference and elevation taken from GPS survey.
Installed with 1.0mbgl as plain pipe and to 10.0mbgl slotted pipe.
Cable percussive borehole drilled adjacent see seperate sheet (ref. B2).
NI=Not intact.**Scale
(approx)**

1:50

**Logged
By**

RW

Figure No.

LKC 22 1332.RB2

Machine :
Flush :
Core Dia : mm

Method : Rotary Cored

Casing Diameter
Ground Level (mOD)

36.43

Client

Laidrah Ltd

**Job
Number**

LKC 22 1332

Location (Handheld GPS)

340470 E 391962 N

Dates

02/08/2022

Engineer

LKC

Sheet

2/2

Depth (m)	TCR (%)	SCR (%)	RQD (%)	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
11.50	90	90	81	Av:250 Min:NI Max:430	Medium spaced subhorizontal open to tight clayey sand infilled fractures, planar smooth to planar rough.		(5.20)	No recovery between 11.50-11.60mbgl. No recovery between 11.70-12.00mbgl.			
13.50	75	50	55	Av:120 Min:2 Max:300	Medium to extremely closely spaced subhorizontal open and sand infilled fractures, planar smooth to planar rough. Closely spaced subhorizontal open fractures, planar smooth or planar rough.	22.93	13.50	Medium strong fine to coarse grained thickly bedded SANDSTONE between 12.40-12.60mbgl. Significant subvertical fracture between 12.50-12.65mbgl. Extremely weak between 13.10-13.20mbgl.			
					Extremely close to medium spaced subhorizontal to subvertical open to tight, clayey sand infilled fractures, planar smooth to undulating smooth.			Complete at 13.50m			

Remarks

Grid reference and elevation taken from GPS survey.
Installed with 1.0mbgl as plain pipe and to 10.0mbgl slotted pipe.
Cable percussive borehole drilled adjacent see seperate sheet (ref. B2).
NI=Not intact.

**Scale
(approx)**

1:50

**Logged
By**

RW

Figure No.

LKC 22 1332.RB2

Excavation Method

Machine excavated to 2.6mbgl.

Dimensions

0.6m x 5.7m x 2.6m

Ground Level (mOD)

39.43

Client

Laidrah Ltd

**Job
Number**
LKC 22 1332

Location (Handheld GPS)

340325 E 391971 N

Dates

04/08/2022

Engineer

LKC

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	ES PID=0.2ppm				(1.00)	MADE GROUND: Dark brown sandy clayey GRAVEL predominantly concrete and brick fragments with occasional timber, ash and rare broken cables. Sand is fine to coarse. Gravel is fine to coarse, subangular to angular.		
1.00-1.70	B			38.43	1.00 (0.70)	MADE GROUND: Firm consistency medium strength brown gravelly slightly sandy CLAY (reworked). Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising mudstone and sandstone.		
1.70-2.60	B SV=58.00kPa average			37.73	1.70	Broken electric cable present in side of southern wall at 1.7mbgl.		
					(0.90)	Firm to stiff consistency medium strength reddish brown gravelly slightly sandy CLAY with rare rootlets. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising mudstone and sandstone.		
				36.83	2.60	Complete at 2.60m		


Remarks

Pit was dry and stable.
Light weight deflectometer test carried out at surface, at 0.5mbgl and 1.0mbgl.
Trial pit part of larger trench see separate sheets (ref. ST1M).
Location and elevation taken from GPS survey.

Scale (approx)

1:40

Logged By

RW

Figure No.

LKC 22 1332.ST1E

Excavation Method

Machine excavated to 2.00mbgl.

Dimensions

0.6m x 5.7m x 2.0m

Ground Level (mOD)

39.48

Client

Laidrah Ltd

**Job
Number**

LKC 22 1332

Location (Handheld GPS)

340316 E 391970 N

Dates

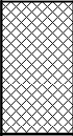
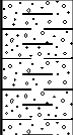
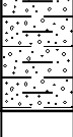
04/08/2022

Engineer

LKC

Sheet

1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.70	ES PID=0.3ppm				(0.70)	MADE GROUND: Dark brown sandy clayey GRAVEL of predominantly concrete and brick fragments with occasional timber, ash, glazed brick, pottery, rare broken cables and cobbles of concrete (>300mm diameter). Sand is fine to coarse. Gravel is fine to coarse, subangular to angular.		
0.70-1.50	B			38.78	0.70	Firm to stiff consistency medium strength reddish brown gravelly slightly sandy CLAY with rare rootlets. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising mudstone and sandstone.		
1.00-2.00	SV 50.67kPa average				(1.30)			
1.50-2.00	B			37.48	2.00	Complete at 2.00m		


Remarks

Pit was dry and stable.
Light weight deflectometer test carried out at surface, at 0.5mbgl and 1.0mbgl.
Trial pit part of larger trench see separate sheets (ref. ST1E).
Location and elevation taken from GPS survey.

Scale (approx)

1:40

Logged By

RW

Figure No.

LKC 22 1332.ST1M

Excavation Method

Machine excavated to 2.0mbgl.

Dimensions

0.6m x 5.7m x 2.0m

Ground Level (mOD)

37.08

Client

Laidrah Ltd

**Job
Number**

LKC 22 1332

Location (Handheld GPS)

340429 E 391980 N

Dates

03/08/2022

Engineer

LKC

Sheet

1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.10	ES PID= 0.7ppm					MADE GROUND: Soft consistency brown gravelly very sandy CLAY with gravel predominantly comprising brick and concrete fragments, occasional ash, timber, plastic, rare pottery and cobbles comprising bricks (>300mm diameter). Sand is fine to coarse. Gravel is fine to coarse, subangular.		
0.60-1.00	B				(1.10)	Slight organic odour noted from 0.8mbgl to 1.1mbgl.		
1.10-2.00 1.10-2.00	B SV= 45.5kPa D		Slow(1) at 1.30m.	35.98	1.10	Firm to stiff consistency medium strength reddish brown gravelly very sandy CLAY with occasional lenses of sand. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising mudstone and sandstone.		√1
					(0.90)			
				35.08	2.00	Complete at 2.00m		


Remarks

Location and elevation taken from GPS survey.
Trial pit part of larger trench see separate sheets (ref. ST2S and ST2N).
Pit was wet on western side at 1.3mbgl. Noted to be slow seepage.
Top metre of pit noted to be collapsing.

Scale (approx)

1:40

Logged By

RW

Figure No.

LKC 22 1332.ST2M

Excavation Method

Machine excavated to 2.0mbgl.

Dimensions

0.6m x 5.7m x 2.0m

Ground Level (mOD)

39.96

Client

Laidrah Ltd

**Job
Number**
LKC 22 1332

Location (Handheld GPS)

340427 E 391988 N

Dates

03/08/2022

Engineer

LKC

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.70 0.00-0.70	B ES PID=<0.0ppm					MADE GROUND: Brown very sandy clayey GRAVEL of predominantly brick fragments, concrete fragments with occasional pottery, plastic, rare ash and metal. Sand is fine to coarse. Gravel is fine to coarse, subangular comprising sandstone and mudstone.		
0.70-1.00	B				(1.00)	Boulders of concrete and remains of brick walls identified within the top metre.		
1.00-1.90	B SV=45.60kPa		Moderate(1) at 1.00m.	38.96	1.00	Soft consistency brown CLAY from 0.7mbgl to 1.0mbgl. Broken lead water pipe identified at 0.9mbgl on both sides of the pit.		▽1
					(1.00)	Soft to firm consistency medium strength reddish brown with grey mottling gravelly very sandy CLAY with occasional and lenses and rare rootlets. Sand is fine to coarse. Gravel is fine to coarse, subangular comprising mudstone and sandstone.		
				37.96	2.00	Complete at 2.00m		


Remarks

Location and elevation taken from GPS survey.
Trial pit part of larger trench see separate sheets (ref. ST2S and ST2M).
Top metre noted to be collapsing.
Light weight deflectometer test carried out at surface, at 0.5mbgl and 1.0mbgl.

Scale (approx)

1:40

Logged By

RW

Figure No.

LKC 22 1332.ST2N

Excavation Method

Machine excavated to 2.0mbgl.

Dimensions

0.6m x 5.7m x 2.0m

Ground Level (mOD)

37.28

Client

Laidrah Ltd

**Job
Number**

LKC 22 1332

Location (Handheld GPS)

340431 E 391971 N

Dates

03/08/2022

Engineer

LKC

Sheet

1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.50	ES PID=0.1ppm				(0.50)	MADE GROUND: Brown sandy slightly clayey GRAVEL predominantly brick fragments and concrete fragments with occasional ash, metal, rare broken cables, plastic, tarmacadam fragments, cobbles of concrete and bricks (>300mm diameter). Sand is fine to coarse. Gravel is fine to medium, subangular comprising MADE GROUND: Soft to firm consistency low strength brown gravelly slightly sandy CLAY with occasional sand lenses and occasional brick fragments. Sand is fine to coarse. Gravel is fine to medium, subangular to angular comprising mudstone and sandstone. Stiff consistency medium strength brown with grey mottling slightly gravelly sandy CLAY with rare rootlets. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising mudstone and sandstone. Complete at 2.00m		
0.50-1.00	B SV= 29.50kPa			36.78	0.50			
					(0.50)			
1.00-2.00	B SV= 46.25kPa			36.28	1.00			
					(1.00)			
				35.28	2.00			


Remarks

Light weight deflectometer test carried out at surface, at 0.5mbgl and 1.0mbgl.
Pit was dry and stable.
Trial pit part of larger trench see separate sheets (ref. ST2M and ST2N).
Location and elevation taken from GPS survey.

Scale (approx)

1:40

Logged By

RW

Figure No.

LKC 22 1332.ST2S

Excavation Method

Machine excavated to 2.7mbgl.

Dimensions

0.6m x 5.7m x 2.7m

Ground Level (mOD)

39.24

Client

Laidrah Ltd

**Job
Number**
LKC 22 1332

Location (Handheld GPS)

340347 E 391949 N

Dates

04/08/2022

Engineer

LKC

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.50 0.00-0.50	D ES PID= 1.3ppm				(0.70)	MADE GROUND: Soft consistency brown very gravelly sandy CLAY with frequent brick fragments, concrete fragments, occasional metal, roots, timber, electronics, ash, rare tarmacadam, glazed brick and cobbles of concrete (>300mm diameter). Sand is fine to coarse. Gravel is fine to coarse, angular to subangular comprising sandstone and mudstone.		
0.50-1.30 0.50-1.30 0.70-1.30	D ES PID=1.0ppm B SV=28.00kPa			38.54	0.70	MADE GROUND: Soft consistency low strength brown slightly gravelly sandy CLAY with rare brick fragments and timber. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising mudstone and sandstone. Slight organic odour noted surrounding timber/roots. Broken plastic pipe noted on both sides of pit at 1.2mbgl.		
2.20-2.70	B SV=54.50kPa			37.04	2.20	Firm to stiff consistency medium strength reddish brown gravelly very sandy CLAY with occasional lenses of sand. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded comprising siltstone, mudstone and sandstone. Clay noted to be friable in some parts of the pit.		
				36.54	2.70	Complete at 2.70m		


Remarks

Pit was dry and stable.
Trial pit part of larger trench see separate sheets (ref. ST3N and ST3S).
Location and elevation taken from GPS survey.

Scale (approx)

1:40

Logged By

RW

Figure No.

LKC 22 1332.ST3M

Excavation Method

Machine excavated to 2.0mbgl.

Dimensions

0.6m x 5.7m x 2.0m

Ground Level (mOD)

39.23

Client

Laidrah Ltd

**Job
Number**
LKC 22 1332

Location (Handheld GPS)

340345 E 391958 N

Dates

04/08/2022

Engineer

LKC

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.50	ES PID=1.4ppm				(0.50)	MADE GROUND: Soft consistency brown gravelly very sand CLAY with frequent concrete fragments, brick fragments, occasional broken cables, rubber fragments, and ash. Sand is fine to coarse. Gravel is fine to coarse, subangular to angular mudstone and sandstone.		
0.50-1.00	B SV=42.5kPa			38.73	0.50 (0.50)	Soft to firm consistency medium strength brown gravelly very sandy CLAY. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising mudstone, siltstone and sandstone.		
1.00-2.00	B SV=59.0kPa			38.23	1.00 (1.00)	Firm to stiff consistency medium strength reddish brown with grey mottling gravelly very sandy CLAY with rare rootlets. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising mudstone and sandstone.		
				37.23	2.00	Complete at 2.00m		


Remarks

Light weight deflectometer test carried out at surface, at 0.5mbgl and 1.0mbgl.
Pit was dry and stable.
Trial pit part of larger trench see separate sheets (ref. ST3M and ST3S).
Location and elevation taken from GPS survey.

Scale (approx)

1:40

Logged By

RW

Figure No.

LKC 22 1332.ST3N

Excavation Method

Machine excavated to 2.0mbgl.

Dimensions

0.6m x 5.7m x 2.0m

Ground Level (mOD)

39.34

Client

Laidrah Ltd

**Job
Number**
LKC 22 1332

Location (Handheld GPS)

340350 E 391941 N

Dates

03/08/2022

Engineer

LKC

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00 0.00-1.00	D ES PID= 1.3ppm				(1.00)	MADE GROUND: Brown sandy clayey GRAVEL of predominantly brick and concrete fragments with occasional, timber ash, rebar, pottery, cobble of concrete (>300mm diameter), rare rootlets, metal, plastic and tarmacadam. Sand is fine to coarse. Gravel is fine to coarse, subangular.		
						Slight organic odour noted surrounding timber/roots.		
1.00-2.00	B SV= 48.5kPa			38.34	1.00	Stiff consistency reddish brown gravelly very sandy CLAY. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded comprising siltstone, mudstone and sandstone.		
					(1.00)			
				37.34	2.00	Complete at 2.00m		


Remarks

Pit was dry and stable.
Light weight deflectometer test carried out at surface, at 0.5mbgl and 1.0mbgl.
Trial pit part of larger trench see separate sheets (ref. ST3N and ST3M).
Location and elevation taken from GPS survey.

Scale (approx)

1:40

Logged By

RW

Figure No.

LKC 22 1332.ST3S

Excavation Method

Drive-in Windowless Sampler

Dimensions
Ground Level (mOD)

40.90

Client

Laidrah Ltd

Job Number
LKC 22 1332

Location (Handheld GPS)

340323 E 391908 N

Dates

26/07/2022

Engineer

LKC

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.50	ES PID=0.2ppm				(0.50)	MADE GROUND: Dark brown sandy silty GRAVEL predominantly concrete fragments with frequent brick fragments, ash and rare metal. Sand is fine to coarse. Gravel is fine to coarse, subangular.		
0.50-1.50	PP 24.53kPa			40.40	0.50	Soft consistency low strength brown sandy silty CLAY with occasional rootlets. Sand is fine to medium.		
1.20-1.65	SPT N=5		1,1/1,1,1,2		(1.00)			
1.50-2.00	PP 106.28kPa			39.40	1.50	Soft to firm consistency low strength brown with grey mottling slightly gravelly sandy silty CLAY with rare rootlets. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded comprising mudstone and sandstone. High strength from below 1.5mbgl. Soft consistency from below 2.0mbgl.		
2.00-2.45	SPT N=9		1,2/2,2,2,3		(1.20)			
2.00-2.70	PP 24.53kPa							
2.30-2.70	D							
2.70-3.00	D			38.20	2.70	Brown clayey fine to medium SAND.		
3.00-3.45	SPT N=11		1,1/2,2,2,5	37.90	3.00	Firm consistency brown slightly gravelly very sandy CLAY. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded comprising mudstone and sandstone.		
3.00-3.45	D				(1.00)			
4.00-4.40	SPT 50/250		9,12/13,17,20	36.90	4.00	Brown weathered SANDSTONE recovered as sandy gravel.		
				36.50	4.40	Complete at 4.40m		

Remarks

Location and elevation taken from topography survey.
Borehole was dry and stable.
Strata with high sand content could not produce an accurate pocket penetrometer reading from 3.0mbgl to 4.0mbgl.

Scale (approx)

1:40

Logged By

RW

Figure No.

LKC 22 1332.W1

Excavation Method Drive-in Windowless Sampler	Dimensions	Ground Level (mOD) 39.43	Client Laidrah Ltd	Job Number LKC 22 1332
	Location (Handheld GPS) 340332 E 391963 N	Dates 26/07/2022	Engineer LKC	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30-0.70	ES PID=0.4ppm				(1.30)	MADE GROUND: Brown sandy GRAVEL predominantly concrete fragments with frequent brick fragments, ash and rare timber. Sand is fine to coarse. Gravel is fine to medium, subangular.		
1.20-1.65 1.30-2.00	SPT N=7 PP 42.92kPa		3,3/1,2,2,2	38.13	1.30	Firm to stiff consistency medium to high strength brown gravelly slightly sandy silty CLAY. Sand is fine to coarse. Gravel is fine to medium, subangular to rounded comprising mudstone and sandstone. Medium strength from below 1.3mbgl.		
1.70-2.00	D							
2.00-2.45 2.00-2.45 2.00-2.70	SPT N=13 D PP 131.82kPa		2,3/3,3,3,4			High strength from below 2.0mbgl.		
2.50-2.60	D				(3.10)			
3.00-3.45	SPT N=24		4,5/5,6,6,7					
4.00-4.45	SPT N=47		9,10/11,12,12,12	35.03	4.40	Red weathered SANDSTONE recovered as sandy gravel.		
4.70-5.10	SPT 25*/70 50/330		25/50	34.33	(0.70) 5.10	Complete at 5.10m		

Remarks

Sampler refused at 4.70mbgl on weathered sandstone.
Location and elevation taken from topography survey.
Borehole was dry and stable.

Scale (approx)

1:40

Logged By

RW

Figure No.

LKC 22 1332.W2

Excavation Method

Drive-in Windowless Sampler

Dimensions
Ground Level (mOD)

38.70

Client

Laidrah Ltd

**Job
Number**
LKC 22 1332

Location (Handheld GPS)

340373 E 391949 N

Dates

26/07/2022

Engineer

LKC

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.50	ES PID=0.1ppm				(0.50)	MADE GROUND: Brown slightly sandy very clayey GRAVEL predominantly brick fragments with occasional ash, concrete fragments and timber. Sand is fine to coarse. Gravel is fine to coarse, subangular.		
0.50-1.00	ES PP=52.73kPa PP 52.73kPa			38.20	0.50	Soft to stiff consistency medium to high strength brown gravelly slightly sandy silty CLAY with sand content increasing with depth and rare rootlets. Sand is fine to coarse. Gravel is fine to medium, subangular to rounded comprising mudstone and sandstone.		
1.00-2.00	PP 94.01kPa		1,2/2,3,3,3			Soft consistency from 0.5mbgl to 1.0mbgl.		
1.20-1.65	SPT N=11					Stiff consistency high strength from below 1.0mbgl.		
2.00-2.45	SPT N=13		2,3/3,3,3,4					
2.00-3.00	PP 121.40kPa							
2.50-3.00	D				(4.20)			
3.00-3.45	SPT N=21		3,4/5,5,5,6					
3.50-4.00	D							
4.00-4.45	SPT N=34		6,7/8,10,8,8			Firm consistency medium strength from below 4.0mbgl.		
4.00-4.70	PP 73.58kPa							
4.70-5.11	SPT 50/260		7,14/14,15,21	34.00	4.70	Red weathered SANDSTONE recovered as sandy gravel.		
				33.59	5.11	Complete at 5.11m		

Remarks

Sampler refused at 4.70mbgl on weathered sandstone.
Location and elevation taken from topography survey.
Borehole was dry and stable.

Scale (approx)

1:40

Logged By

RW

Figure No.

LKC 22 1332.W3

Excavation Method

Drive-in Windowless Sampler

Dimensions
Location (Handheld GPS)

340426 E 391946 N

Ground Level (mOD)

37.61

Dates

26/07/2022

Client

Laidrah Ltd

Engineer

LKC

Job
Number
LKC 22 1332

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.30	ES PID=0.2ppm				(0.30)	MADE GROUND: Brown sandy silty GRAVEL predominantly concrete and brick fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to angular.		
0.30-1.00	D			37.31	0.30	MADE GROUND: Soft consistency brown very gravelly slightly sandy CLAY with frequent brick, rare ash and timber. Sand is fine to coarse. Gravel is fine to coarse, subangular to angular.		
1.00-1.40	D		2,2/3,3,3,3	36.61	1.00	Soft to stiff consistency low to high strength brown gravelly slightly sandy silty CLAY with rare rootlets. Sand is fine to coarse. Gravel is fine to medium, subangular to rounded comprising mudstone and sandstone. Stiff consistency from below 2.0mbgl. Becomes soft fro below 4.0mbgl. Soft consistency low strength from 1.0mbgl to 2.0mbgl.		
1.00-2.00	PP 36.79kPa							
1.20-1.65	SPT N=12							
1.70-2.00	D							
2.00-2.45	SPT N=10		2,2/2,2,3,3			Stiff consistency high strength from 2.0mbgl to 4.0mbgl.		
2.00-2.45	D							
2.00-3.00	PP 137kPa							
3.00-3.45	SPT N=18		3,3/4,4,5,5		(3.70)			
3.00-4.00	PP 88.29kPa							
4.00-4.45	SPT N=24		3,4/5,6,6,7			Becomes soft consistency medium strength from below 4.0mbgl.		
4.00-5.00	PP 49.05kPa							
5.00-5.45	SPT N=32		4,5/7,8,8,9	32.91	4.70	Red weathered SANDSTONE recovered as sandy gravel.		
					(0.75)			
				32.16	5.45	Complete at 5.45m		

Remarks

Borehole was dry and stable.
Location and elevation taken from topogrpahy survey.

Scale
(approx)

1:40

Logged
By

RW

Figure No.

LKC 22 1332.W4

Excavation Method

Drive-in Windowless Sampler

Dimensions
Ground Level (mOD)

37.92

Client

Laidrah Ltd

Job Number
LKC 22 1332

Location (Handheld GPS)

340444 E 391936 N

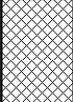
Dates

26/07/2022

Engineer

LKC

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.40	ES PID=0.1ppm				(0.40)	MADE GROUND: Brown sandy silty GRAVEL predominantly concrete and brick fragments with occasional ash, clinker, rare timber, glass and textiles. Sand is fine to coarse. Gravel is fine to coarse, subangular to angular.		
0.40-0.80	ES PID=0.1ppm			37.52	0.40			
					(0.60)	MADE GROUND: Firm consistency brown very gravelly very sandy CLAY with frequent ash. Sand is fine to coarse. Gravel is fine to coarse, subangular comprising sandstone. Noted to be very dry.		
				36.92	1.00			
1.00-2.00	PP 66.00kPa					Firm to stiff consistency medium to very high strength brown with grey mottling gravelly slightly sandy silty CLAY with rare rootlets and sand content increasing with depth. Sand is fine to coarse. Gravel is fine to medium, subangular to rounded comprising mudstone and sandstone. Firm consistency medium strength from 1.0mbgl to 3.0mbgl.		
1.20-1.65	SPT N=9		1,2/2,2,2,3					
1.20-1.65	D							
2.00-2.45	SPT N=9		2,2/2,2,2,3			Stiff consistency high to very high strength from below 3.0mbgl.		
2.00-2.45	D							
2.30-3.00	PP 59.27kPa							
2.70-3.00	D							
3.00-3.45	SPT N=21		2,3/4,5,6,6					
3.00-3.45	D							
3.00-4.00	PP 121.40kPa				(4.45)			
4.00-4.45	SPT N=38		6,7/7,14,10,7					
4.00-5.00	PP 151.07kPa							
4.30-4.60	D							
5.00-5.45	SPT N=29		4,5/6,7,8,8					
				32.47	5.45	Complete at 5.45m		

Remarks

Borehole was dry and stable.
Location and elevation taken from topography survey.

Scale (approx)

1:40

Logged By

RW

Figure No.

LKC 22 1332.W5

Appendix C

Certificates of Analysis - Soil



Final Report

Report No.: 22-28638-1

Initial Date of Issue: 04-Aug-2022

Client LK Consult

Client Address: Unit 29 Eton Business Park
Eton Hill Road
Radcliffe
Manchester
Lancashire
M26 2ZS

Contact(s): Contaminated Land
Michelle Thorniley

Project LKC 22 1332 Alder Hey, Liverpool

Quotation No.:

Order No.: 740461

No. of Samples: 2

Turnaround (Wkdays): 5

Date Approved: 04-Aug-2022

Date Received: 28-Jul-2022

Date Instructed: 28-Jul-2022

Results Due: 03-Aug-2022

Approved By:

Details: Stuart Henderson, Technical
Manager

Results - Soil

Project: LKC 22 1332 Alder Hey, Liverpool

Client: LK Consult	Chemtest Job No.:				22-28638	22-28638
Quotation No.:	Chemtest Sample ID.:				1477214	1477221
Order No.: 740461	Client Sample Ref.:				ES	ES
	Client Sample ID.:				W1	W5
	Sample Type:				SOIL	SOIL
	Top Depth (m):				0.0	0.0
	Bottom Depth (m):				0.5	0.4
	Date Sampled:				26-Jul-2022	26-Jul-2022
	Asbestos Lab:				DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	10	14
Soil Colour	N	2040		N/A	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones
Soil Texture	N	2040		N/A	Loam	Loam
pH	M	2010		4.0	8.8	8.8
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.77	1.3
Arsenic	M	2455	mg/kg	0.5	2.3	3.5
Cadmium	M	2455	mg/kg	0.10	0.11	0.13
Chromium	M	2455	mg/kg	0.5	11	11
Copper	M	2455	mg/kg	0.50	7.6	14
Mercury	M	2455	mg/kg	0.05	< 0.05	0.05
Nickel	M	2455	mg/kg	0.50	4.9	7.5
Lead	M	2455	mg/kg	0.50	38	110
Selenium	M	2455	mg/kg	0.25	< 0.25	< 0.25
Vanadium	U	2455	mg/kg	0.5	7.1	9.3
Zinc	M	2455	mg/kg	0.50	47	140
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	5.9	4.1
Naphthalene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	2.1	4.0
Anthracene	M	2800	mg/kg	0.10	0.38	0.75
Fluoranthene	M	2800	mg/kg	0.10	3.2	5.0
Pyrene	M	2800	mg/kg	0.10	3.3	4.7
Benzo[a]anthracene	M	2800	mg/kg	0.10	1.5	2.0
Chrysene	M	2800	mg/kg	0.10	1.7	2.1
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	2.2	2.8
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	0.83	1.0
Benzo[a]pyrene	M	2800	mg/kg	0.10	1.9	2.7
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10	1.4
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	0.36
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10	1.6

Results - Soil

Project: LKC 22 1332 Alder Hey, Liverpool

Client: LK Consult	Chemtest Job No.:		22-28638	22-28638
Quotation No.:	Chemtest Sample ID.:		1477214	1477221
Order No.: 740461	Client Sample Ref.:		ES	ES
	Client Sample ID.:		W1	W5
	Sample Type:		SOIL	SOIL
	Top Depth (m):		0.0	0.0
	Bottom Depth (m):		0.5	0.4
	Date Sampled:		26-Jul-2022	26-Jul-2022
	Asbestos Lab:		DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD
Total Of 16 PAH's	N	2800	mg/kg	2.0
				17
				28

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenzo[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com

Final Report

Report No.: 22-28952-1

Initial Date of Issue: 15-Aug-2022

Client LK Consult

Client Address: Unit 29 Eton Business Park
Eton Hill Road
Radcliffe
Manchester
Lancashire
M26 2ZS

Contact(s): Contaminated Land
Michelle Thorniley

Project LKC 22 1332 Alder Hey, Liverpool

Quotation No.:

Order No.: 740469

No. of Samples: 2

Turnaround (Wkdays): 5

Date Approved: 15-Aug-2022

Date Received: 01-Aug-2022

Date Instructed: 08-Aug-2022

Results Due: 12-Aug-2022

Approved By:



Details: Stuart Henderson, Technical
Manager

Results - Soil

Project: LKC 22 1332 Alder Hey, Liverpool

Client: LK Consult	Chemtest Job No.:				22-28952	22-28952
Quotation No.:	Chemtest Sample ID.:				1478590	1478591
Order No.: 740469	Client Sample Ref.:				ES	ES
	Client Sample ID.:				B5	B1
	Sample Type:				SOIL	SOIL
	Top Depth (m):				0.00	0.00
	Bottom Depth (m):				1.40	0.40
	Date Sampled:				28-Jul-2022	28-Jul-2022
	Asbestos Lab:				DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	15	11
Soil Colour	N	2040		N/A	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones
Soil Texture	N	2040		N/A	Clay	Clay
pH	U	2010		4.0	9.0	10.9
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.77	0.29
Arsenic	U	2455	mg/kg	0.5	4.4	6.6
Cadmium	U	2455	mg/kg	0.10	< 0.10	0.18
Chromium	U	2455	mg/kg	0.5	16	17
Copper	U	2455	mg/kg	0.50	11	14
Mercury	U	2455	mg/kg	0.05	< 0.05	0.05
Nickel	U	2455	mg/kg	0.50	15	15
Lead	U	2455	mg/kg	0.50	33	35
Selenium	U	2455	mg/kg	0.25	0.34	0.43
Vanadium	U	2455	mg/kg	0.5	15	18
Zinc	U	2455	mg/kg	0.50	42	45
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	1.5	2.4
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	0.71	0.75
Pyrene	U	2800	mg/kg	0.10	0.65	0.69
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10

Results - Soil

Project: LKC 22 1332 Alder Hey, Liverpool

Client: LK Consult	Chemtest Job No.:		22-28952	22-28952
Quotation No.:	Chemtest Sample ID.:		1478590	1478591
Order No.: 740469	Client Sample Ref.:		ES	ES
	Client Sample ID.:		B5	B1
	Sample Type:		SOIL	SOIL
	Top Depth (m):		0.00	0.00
	Bottom Depth (m):		1.40	0.40
	Date Sampled:		28-Jul-2022	28-Jul-2022
	Asbestos Lab:		DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD
Total Of 16 PAH's	N	2800	mg/kg	2.0
				< 2.0
				< 2.0

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenzo[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



Final Report

Report No.:	22-30111-1		
Initial Date of Issue:	15-Aug-2022		
Client	LK Consult		
Client Address:	Unit 29 Eton Business Park Eton Hill Road Radcliffe Manchester Lancashire M26 2ZS		
Contact(s):	Contaminated Land Michelle Thorniley		
Project	LKC 22 1332 Alder Hey, Liverpool		
Quotation No.:		Date Received:	09-Aug-2022
Order No.:	740482	Date Instructed:	09-Aug-2022
No. of Samples:	6		
Turnaround (Wkdays):	5	Results Due:	15-Aug-2022
Date Approved:	15-Aug-2022		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Soil

Project: LKC 22 1332 Alder Hey, Liverpool

Client: LK Consult	Chemtest Job No.:					22-30111	22-30111	22-30111	22-30111	22-30111	22-30111
Quotation No.:	Chemtest Sample ID.:					1483646	1483647	1483648	1483649	1483650	1483651
	Client Sample ID.:					ST1M	ST2S	ST2N	ST3M	ST3S	B3
	Sample Type:					SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):					0	0	0	0.5	0	0
	Bottom Depth (m):					0.7	0.5	0.7	1.3	1	0.8
	Date Sampled:					04-Aug-2022	03-Aug-2022	03-Aug-2022	04-Aug-2022	03-Aug-2022	01-Aug-2022
	Asbestos Lab:					NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	Accred.	SOP	Units	LOD							
ACM Type	U	2192		N/A	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	10	16	12	17	11	8.2	
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	
Other Material	N	2040		N/A	Roots and Stones	Stones	Stones	Stones	Stones and Roots	Stones	
Soil Texture	N	2040		N/A	Sand	Sand	Sand	Clay	Sand	Sand	
Chromatogram (TPH)	N			N/A		See Attached		See Attached	See Attached		
pH	M	2010		4.0	9.4	9.6	9.7	8.5	9.6	8.5	
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40		2.1		0.65	2.3		
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	1.8	1.5	1.7	0.67	1.7	0.33	
Cyanide (Free)	M	2300	mg/kg	0.50		< 0.50		< 0.50	< 0.50		
Cyanide (Total)	M	2300	mg/kg	0.50		< 0.50		< 0.50	< 0.50		
Arsenic	M	2455	mg/kg	0.5	5.6	4.9	5.2	5.8	5.5	11	
Cadmium	M	2455	mg/kg	0.10	0.12	0.36	0.16	< 0.10	0.16	2.2	
Chromium	M	2455	mg/kg	0.5	10	14	13	18	14	17	
Copper	M	2455	mg/kg	0.50	13	12	16	19	14	470	
Mercury	M	2455	mg/kg	0.05	0.07	0.05	0.06	< 0.05	0.46	0.11	
Nickel	M	2455	mg/kg	0.50	11	9.7	11	21	13	18	
Lead	M	2455	mg/kg	0.50	140	120	130	33	150	480	
Selenium	M	2455	mg/kg	0.25	0.34	0.40	0.34	0.36	0.51	0.58	
Vanadium	U	2455	mg/kg	0.5	16	14	15	18	16	15	
Zinc	M	2455	mg/kg	0.50	170	120	180	54	200	560	
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Organic Matter	M	2625	%	0.40	11	5.5	2.8	0.97	3.8	2.6	
Diesel Present	N	2670		N/A		False		False	False		
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0		< 1.0		< 1.0	< 1.0		
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0		< 1.0		< 1.0	< 1.0		
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0		< 1.0		< 1.0	< 1.0		
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0		< 1.0		< 1.0	< 1.0		
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0		< 1.0		< 1.0	< 1.0		
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0		< 1.0		< 1.0	< 1.0		
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0		< 1.0		< 1.0	< 1.0		
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0		< 1.0	< 1.0		
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0		< 5.0		< 5.0	< 5.0		
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0		< 1.0		< 1.0	< 1.0		
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0		< 1.0		< 1.0	< 1.0		

Results - Soil

Project: LKC 22 1332 Alder Hey, Liverpool

Client: LK Consult	Chemtest Job No.:				22-30111	22-30111	22-30111	22-30111	22-30111	22-30111
Quotation No.:	Chemtest Sample ID.:				1483646	1483647	1483648	1483649	1483650	1483651
	Client Sample ID.:				ST1M	ST2S	ST2N	ST3M	ST3S	B3
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0	0	0	0.5	0	0
	Bottom Depth (m):				0.7	0.5	0.7	1.3	1	0.8
	Date Sampled:				04-Aug-2022	03-Aug-2022	03-Aug-2022	04-Aug-2022	03-Aug-2022	01-Aug-2022
	Asbestos Lab:				NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	Accred.	SOP	Units	LOD						
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0		< 1.0		< 1.0	< 1.0	
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0		< 1.0		< 1.0	< 1.0	
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0		< 1.0		< 1.0	< 1.0	
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0		< 1.0		< 1.0	< 1.0	
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0		< 1.0		< 1.0	< 1.0	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0		< 1.0	< 1.0	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0		< 5.0		< 5.0	< 5.0	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0		< 10		< 10	< 10	
Benzene	M	2760	µg/kg	1.0		< 1.0		< 1.0	< 1.0	
Toluene	M	2760	µg/kg	1.0		< 1.0		< 1.0	< 1.0	
Ethylbenzene	M	2760	µg/kg	1.0		< 1.0		< 1.0	< 1.0	
m & p-Xylene	M	2760	µg/kg	1.0		< 1.0		< 1.0	< 1.0	
o-Xylene	M	2760	µg/kg	1.0		< 1.0		< 1.0	< 1.0	
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0		< 1.0		< 1.0	< 1.0	
Naphthalene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	3.0	4.4	6.5	0.91	4.3	2.7
Anthracene	M	2800	mg/kg	0.10	0.62	0.97	1.3	0.16	0.81	0.73
Fluoranthene	M	2800	mg/kg	0.10	4.2	5.2	6.6	0.93	5.0	4.2
Pyrene	M	2800	mg/kg	0.10	4.0	4.6	5.9	0.91	4.3	4.4
Benzo[a]anthracene	M	2800	mg/kg	0.10	1.8	2.1	2.4	0.38	1.8	3.2
Chrysene	M	2800	mg/kg	0.10	1.9	2.2	2.7	0.33	2.0	3.8
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	2.2	2.4	3.2	< 0.10	2.4	6.1
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	0.82	0.82	1.1	< 0.10	0.86	2.0
Benzo[a]pyrene	M	2800	mg/kg	0.10	1.9	2.3	2.7	< 0.10	1.9	5.3
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	1.3	1.3	1.6	< 0.10	1.3	3.6
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.29	0.22	0.29	< 0.10	0.22	0.59
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	1.4	1.3	1.7	< 0.10	1.1	3.7
Total Of 16 PAH's	N	2800	mg/kg	2.0	23	28	36	3.6	26	40
Total Phenols	M	2920	mg/kg	0.10		< 0.10		< 0.10	< 0.10	

TPH Chromatogram on Soil Sample: 1483647

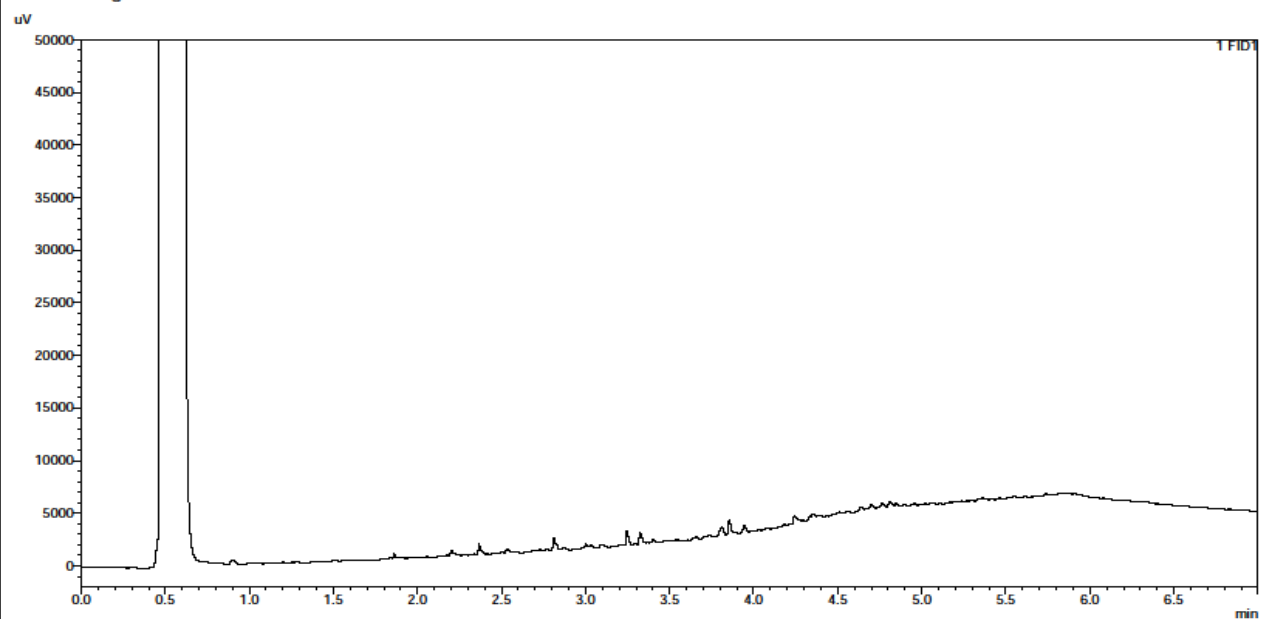
<Sample Information>

Sample Name : Front 1483647 22-30111
Data Filename : 2022-08-09_09082022_Front 1483647 22-30111_139.gcd
Method Filename : TPH 12m Fast OSv2.gcm
Sample # : 70
Date Acquired : 10/08/2022 07:53:02
Date Processed : 10/08/2022



Chemtest

<Chromatogram>



TPH Chromatogram on Soil Sample: 1483649

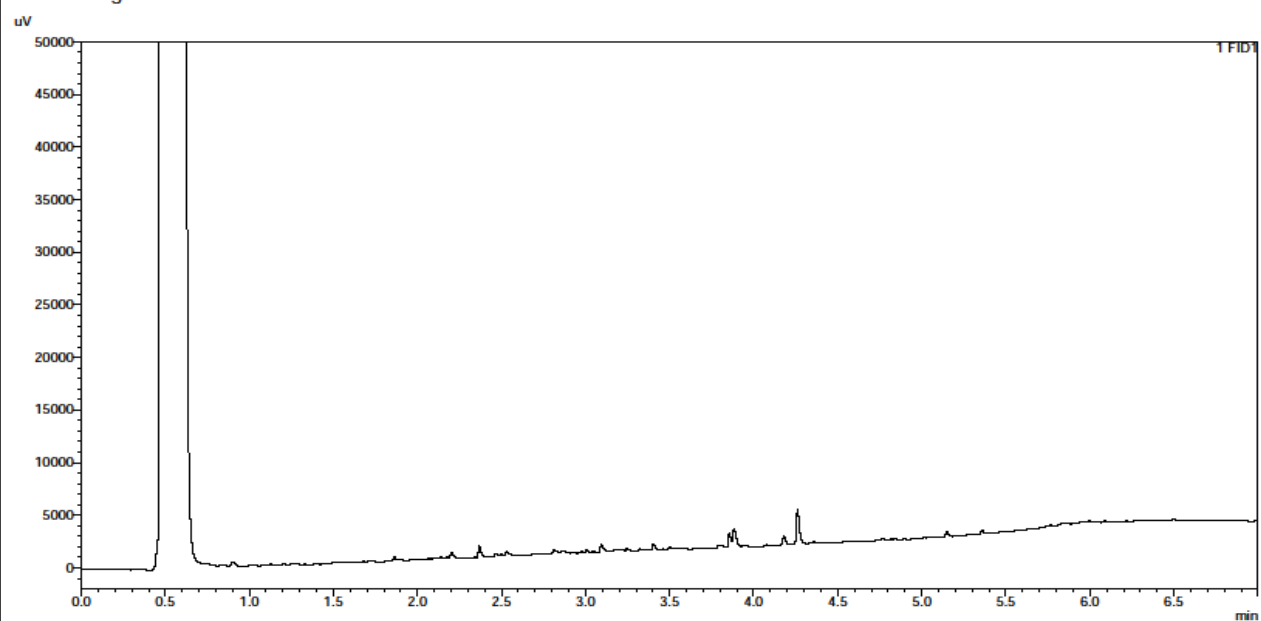
<Sample Information>

Sample Name : Front 1483649 22-30111
Data Filename : 2022-08-09_09082022_Front 1483649 22-30111_141.gcd
Method Filename : TPH 12m Fast OSv2.gcm
Sample # : 71
Date Acquired : 10/08/2022 08:05:36
Date Processed : 10/08/2022



Chemtest

<Chromatogram>



TPH Chromatogram on Soil Sample: 1483650

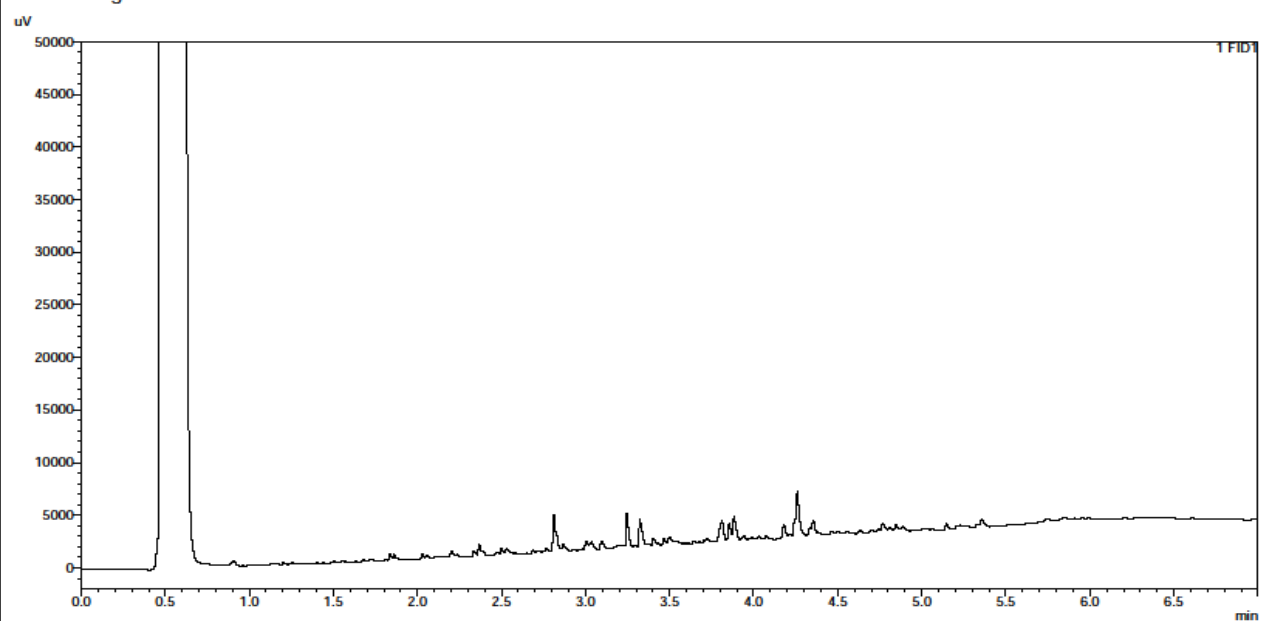
<Sample Information>

Sample Name : Front 1483650 22-30111
Data Filename : 2022-08-09_09082022_Front 1483650 22-30111_143.gcd
Method Filename : TPH 12m Fast OSv2.gcm
Sample # : 72
Date Acquired : 10/08/2022 08:18:07
Date Processed : 10/08/2022



Chemtest

<Chromatogram>



TPH Interpretation

Job	Sample	Matrix	Location	Sample Ref	Sample ID	Sample Depth (m)	Gasoline / Diesel Present	TPH Interpretation
22-30111	1483647	S			ST2S	0	No	N/A
22-30111	1483649	S			ST3M	0.5	No	N/A
22-30111	1483650	S			ST3S	0	No	N/A

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenzo[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

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<	"less than"
>	"greater than"
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LOD	Limit of detection

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The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

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- A - Date of sampling not supplied
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- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

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All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



Final Report

Report No.: 22-28635-1

Initial Date of Issue: 04-Aug-2022

Client LK Consult

Client Address: Unit 29 Eton Business Park
Eton Hill Road
Radcliffe
Manchester
Lancashire
M26 2ZS

Contact(s): Contaminated Land
Michelle Thorniley

Project LKC 22 1332 Alder Hey, Liverpool

Quotation No.:

Order No.: 740462

No. of Samples: 2

Turnaround (Wkdays): 5

Date Approved: 04-Aug-2022

Approved By:

Date Received: 28-Jul-2022

Date Instructed: 28-Jul-2022

Results Due: 03-Aug-2022

Details: Stuart Henderson, Technical
Manager

Results - Soil

Project: LKC 22 1332 Alder Hey, Liverpool

Client: LK Consult	Chemtest Job No.:				22-28635	22-28635
Quotation No.:	Chemtest Sample ID.:				1477206	1477208
Order No.: 740462	Client Sample Ref.:				ES	ES
	Client Sample ID.:				B8	B6
	Sample Type:				SOIL	SOIL
	Top Depth (m):				0.5	0.0
	Bottom Depth (m):				0.9	1.0
	Date Sampled:				26-Jul-2022	26-Jul-2022
	Asbestos Lab:				DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	13	11
Soil Colour	N	2040		N/A	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones
Soil Texture	N	2040		N/A	Loam	Loam
pH	M	2010		4.0	9.1	9.4
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.10	0.13
Arsenic	M	2455	mg/kg	0.5	5.1	3.1
Cadmium	M	2455	mg/kg	0.10	0.15	< 0.10
Chromium	M	2455	mg/kg	0.5	19	7.1
Copper	M	2455	mg/kg	0.50	27	12
Mercury	M	2455	mg/kg	0.05	0.08	< 0.05
Nickel	M	2455	mg/kg	0.50	13	6.9
Lead	M	2455	mg/kg	0.50	140	64
Selenium	M	2455	mg/kg	0.25	< 0.25	< 0.25
Vanadium	U	2455	mg/kg	0.5	14	9.2
Zinc	M	2455	mg/kg	0.50	140	71
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	4.3	5.2
Naphthalene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	1.8	0.76
Anthracene	M	2800	mg/kg	0.10	0.38	0.17
Fluoranthene	M	2800	mg/kg	0.10	2.0	0.99
Pyrene	M	2800	mg/kg	0.10	1.9	0.96
Benzo[a]anthracene	M	2800	mg/kg	0.10	0.72	0.52
Chrysene	M	2800	mg/kg	0.10	0.82	0.44
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10	< 0.10

Results - Soil

Project: LKC 22 1332 Alder Hey, Liverpool

Client: LK Consult	Chemtest Job No.:		22-28635	22-28635
Quotation No.:	Chemtest Sample ID.:		1477206	1477208
Order No.: 740462	Client Sample Ref.:		ES	ES
	Client Sample ID.:		B8	B6
	Sample Type:		SOIL	SOIL
	Top Depth (m):		0.5	0.0
	Bottom Depth (m):		0.9	1.0
	Date Sampled:		26-Jul-2022	26-Jul-2022
	Asbestos Lab:		DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD
Total Of 16 PAH's	N	2800	mg/kg	2.0
				7.6
				3.8

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenzo[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com

Appendix D

Certificates of Analysis - Geotechnical

TEST REPORT

Client LK Consult Ltd

Address Unit 29 Eton Business Park
Eton Hill Road
Radcliffe
Greater Manchester
M26 2ZS

Contract LKC 22 1332 -
Alder Hey, Liverpool

Job Number MRN 4310/120
Date of Issue 13 September 2022
Page 1 of 30

Approved Signatories

S J Hutchings, O P Davies

Notes

- 1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.
- 2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.
- 3 Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.
- 4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted.
- 5 The results included within the report are representative of the samples submitted for analysis.
- 6 This certificate should not be reproduced, except in full, without the express permission of the laboratory.

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.3 (30° FALL CONE) 1 POINT METHOD

PLASTIC LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014

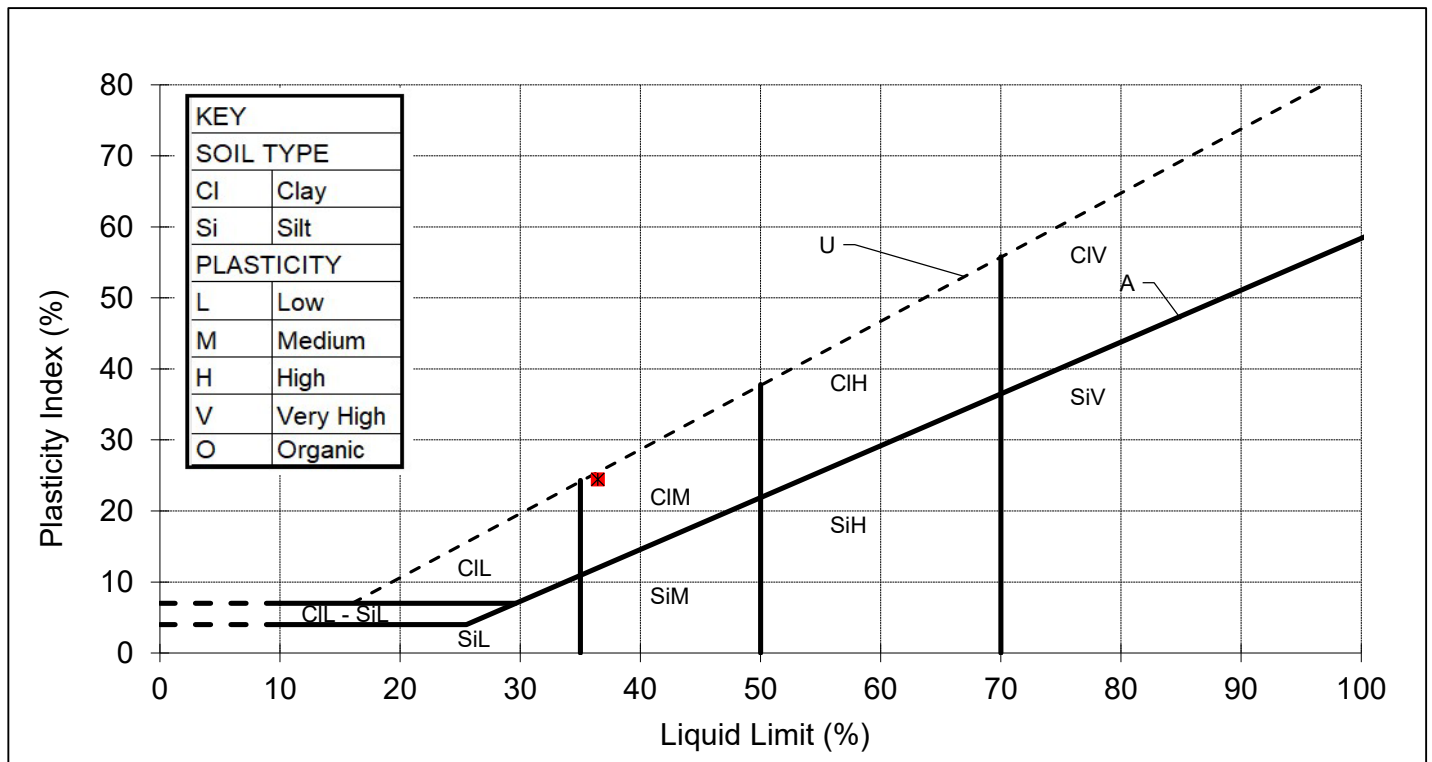
CLIENT	LK Consult Ltd
SITE	LKC 22 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE LABEL	B1 2.2-2.65m	DATE SAMPLED	Not advised
SAMPLE No.	115884	DATE RECEIVED	23-Aug-22
DATE TESTED	31-Aug-22	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	17.7	35.1	1.038	
Determination 2 (avg)	17.7	35.1		

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
12.5	36	12	24	86



REMARKS

SIGNED

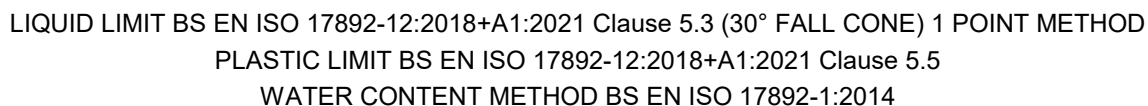
NAME

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

13-Sep-22

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



Page 3 of 30

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.3 (30° FALL CONE) 1 POINT METHOD

PLASTIC LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014

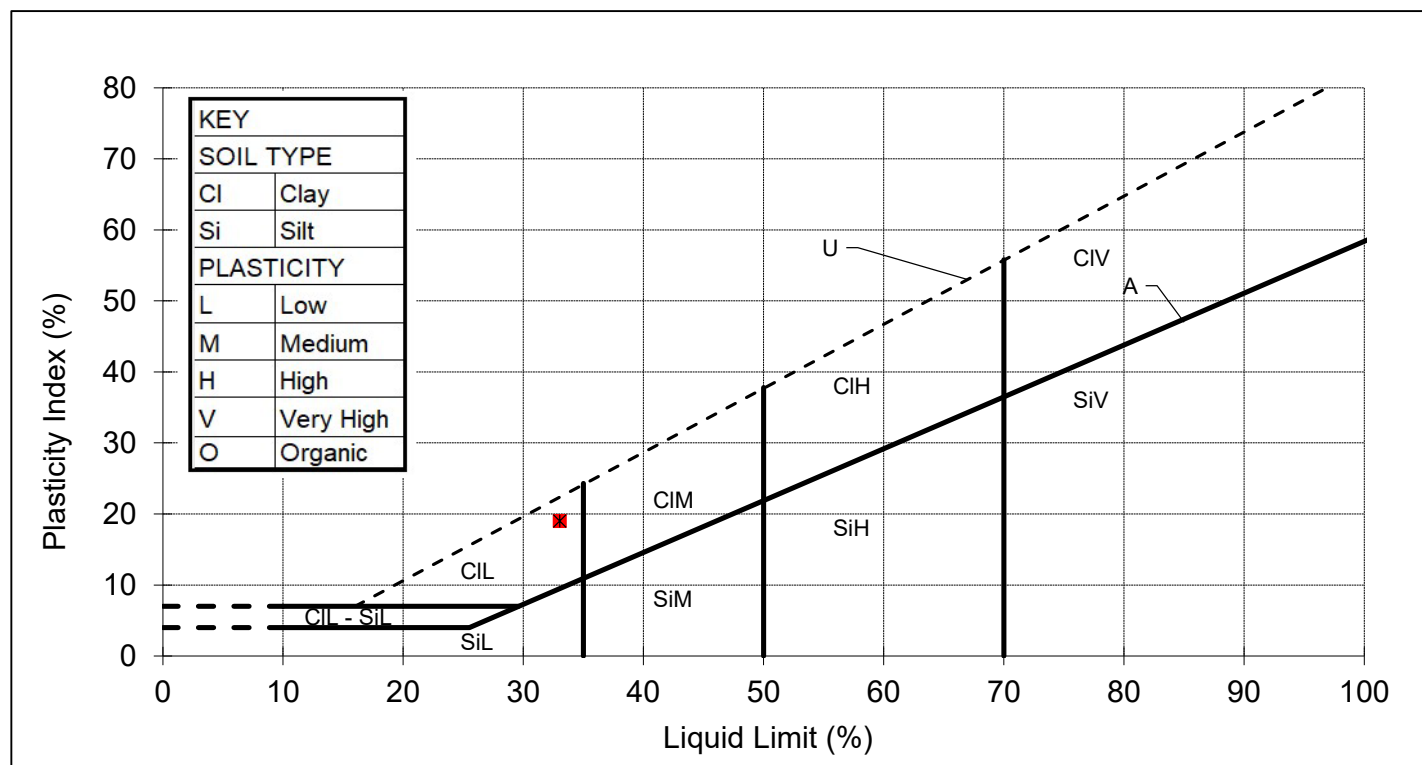
CLIENT	LK Consult Ltd
SITE	LKC 22 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE LABEL	B4 1.2-1.65m	DATE SAMPLED	Not advised
SAMPLE No.	115889	DATE RECEIVED	23-Aug-22
DATE TESTED	31-Aug-22	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	20.0	33.0	1.001	
Determination 2 (avg)	19.9	33.0		

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
17.3	33	14	19	91



REMARKS

SIGNED

NAME

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

13-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014

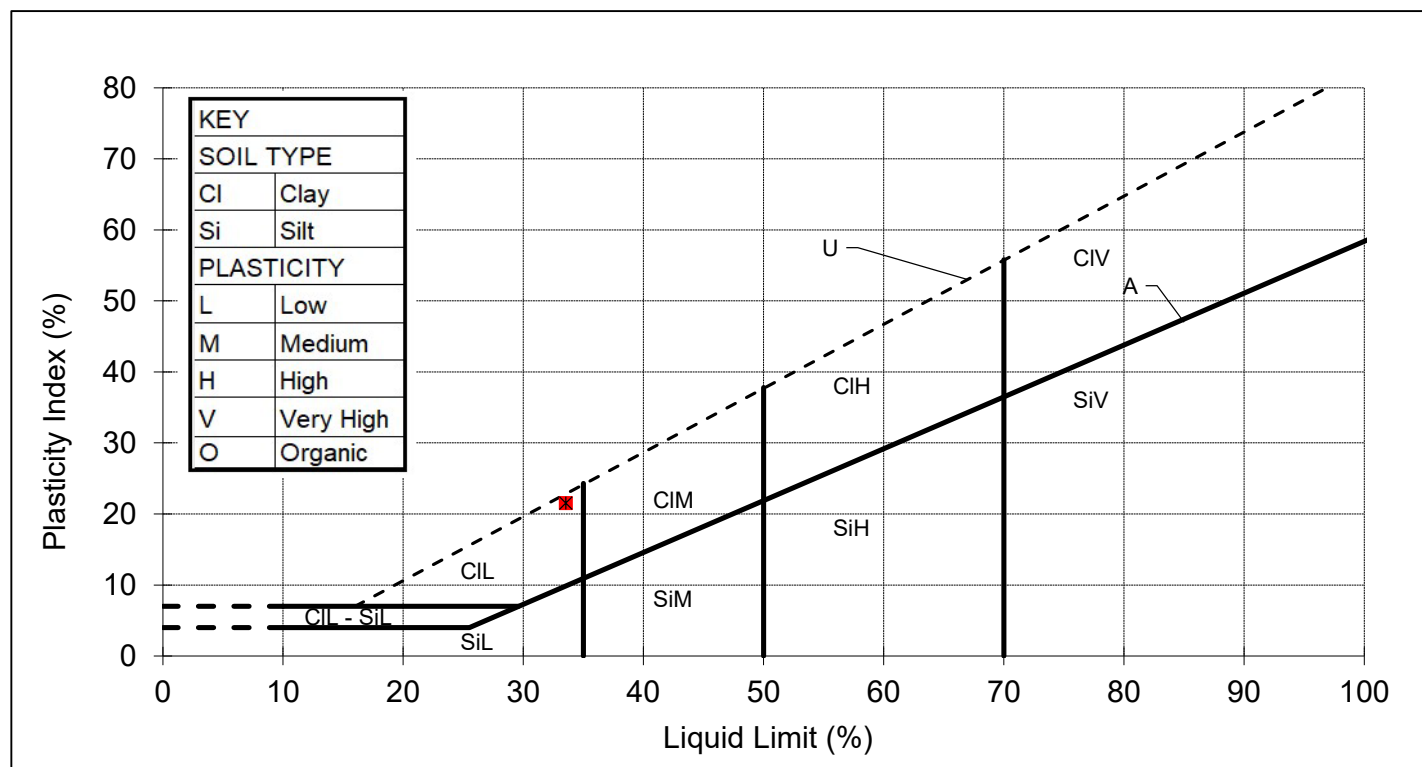
CLIENT	LK Consult Ltd
SITE	LKC 22 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE LABEL	B4 4.4-4.95m	DATE SAMPLED	Not advised
SAMPLE No.	115891	DATE RECEIVED	23-Aug-22
DATE TESTED	31-Aug-22	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)	Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	21.2	34.3	
Determination 2 (avg)	21.1	34.0	

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
11.2	34	12	22	82



REMARKS

SIGNED

NAME

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

13-Sep-22

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PLASTIC LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014

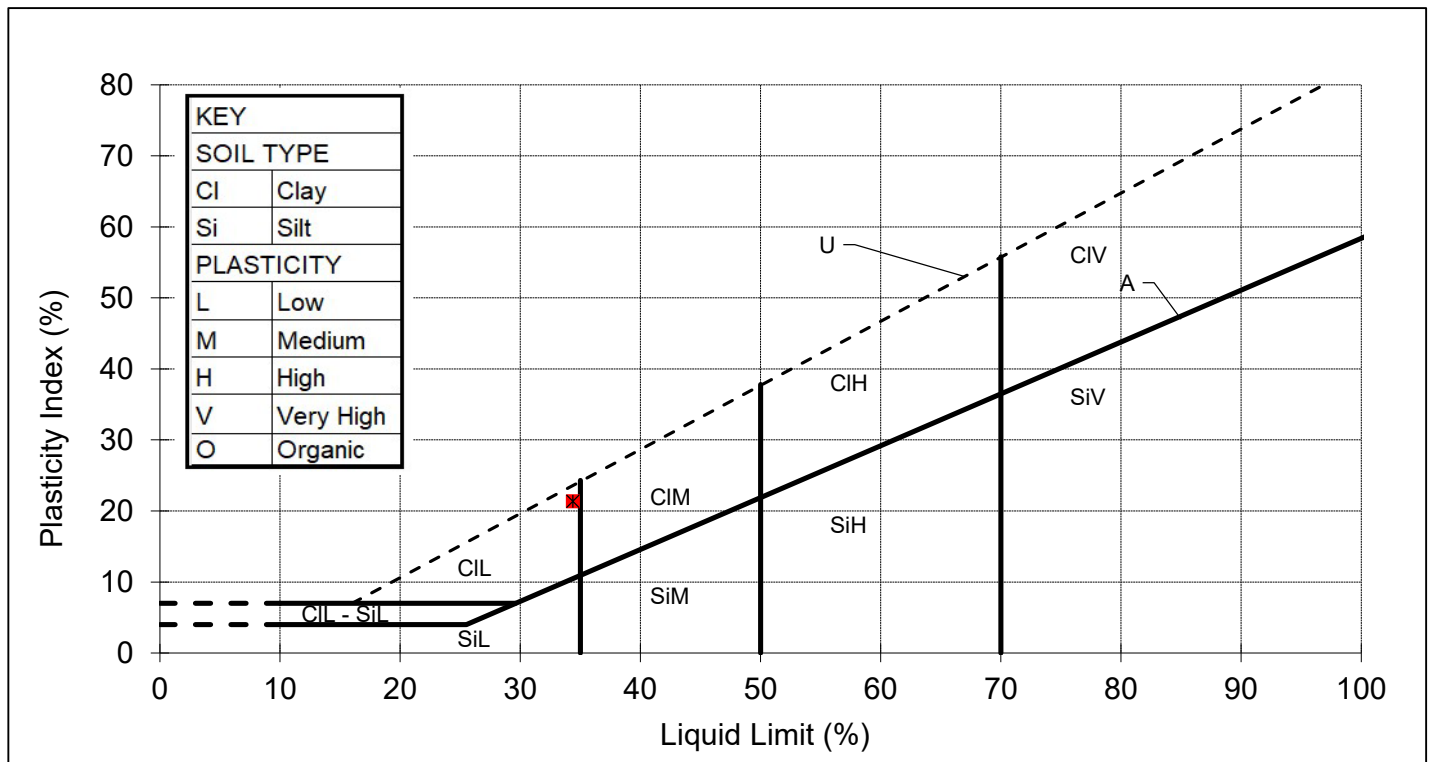
CLIENT	LK Consult Ltd
SITE	LKC 22 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE LABEL	B6 3.3-3.75m	DATE SAMPLED	Not advised
SAMPLE No.	115897	DATE RECEIVED	23-Aug-22
DATE TESTED	31-Aug-22	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	20.3	34.5	0.996	
Determination 2 (avg)	20.2	34.5		

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
15.1	34	13	21	90



REMARKS

SIGNED

NAME

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

13-Sep-22

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DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



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PLASTIC LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014

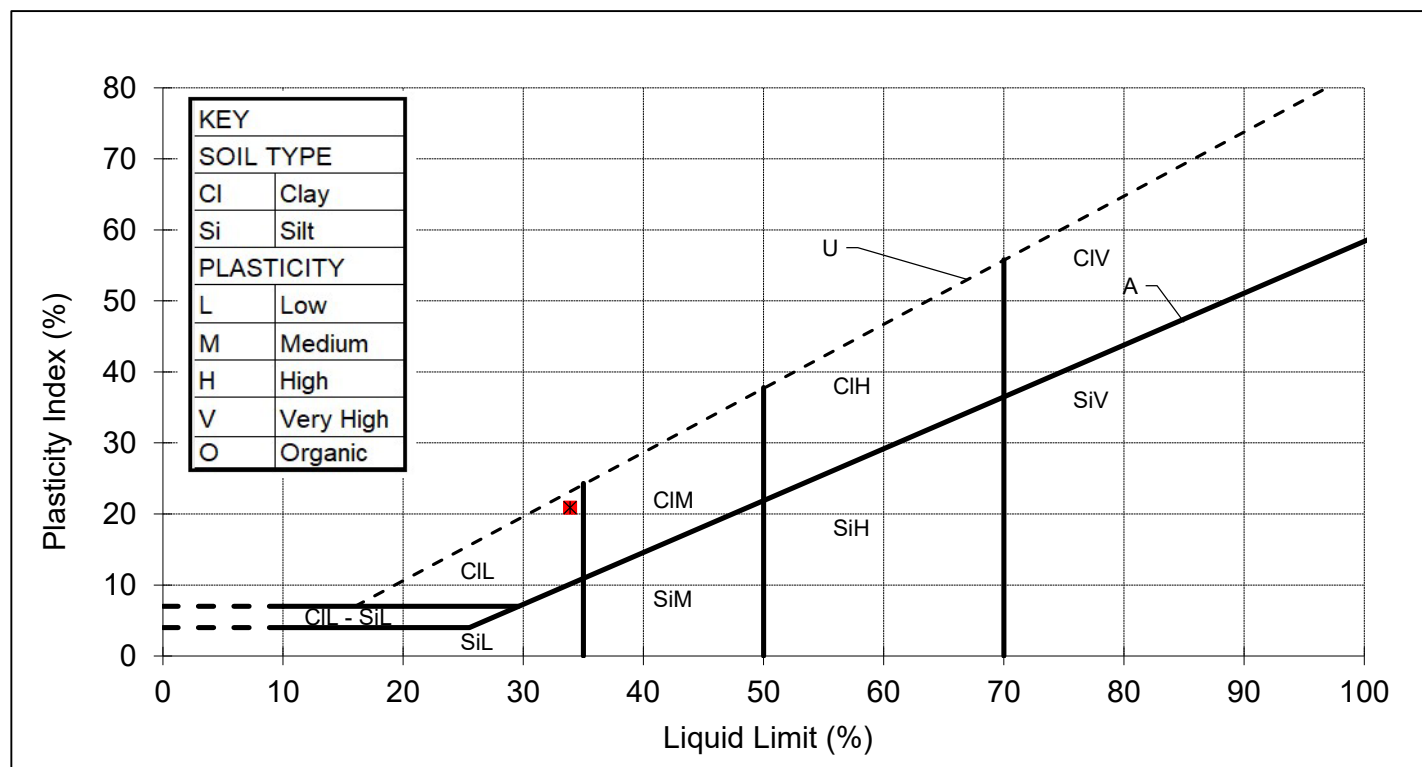
CLIENT	LK Consult Ltd
SITE	LKC 22 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE LABEL	B8 3.80m	DATE SAMPLED	Not advised
SAMPLE No.	115903	DATE RECEIVED	23-Aug-22
DATE TESTED	31-Aug-22	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)	Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	19.9	33.9	
Determination 2 (avg)	19.9	33.8	

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
13.6	34	13	21	84



REMARKS

SIGNED

NAME

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

13-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.3 (30° FALL CONE) 1 POINT METHOD

PLASTIC LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014

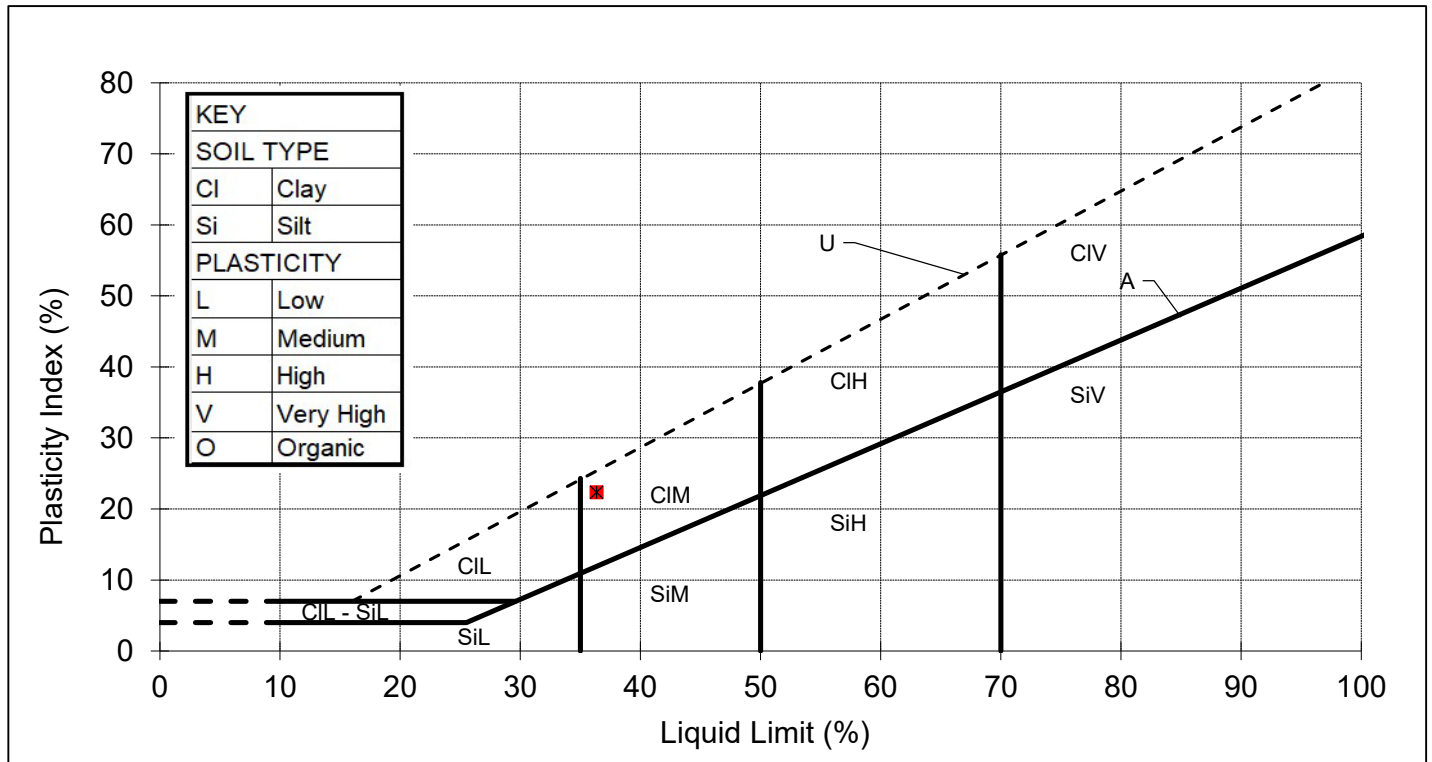
CLIENT	LK Consult Ltd
SITE	LKC 22 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE LABEL	W1 2.3-2.7m	DATE SAMPLED	Not advised
SAMPLE No.	115905	DATE RECEIVED	23-Aug-22
DATE TESTED	31-Aug-22	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	18.2	35.2	1.035	
Determination 2 (avg)	18.1	35.0		

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
15.6	36	14	22	87



REMARKS

SIGNED

NAME

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

13-Sep-22

MURRAY RIX

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DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.3 (30° FALL CONE) 1 POINT METHOD

PLASTIC LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014

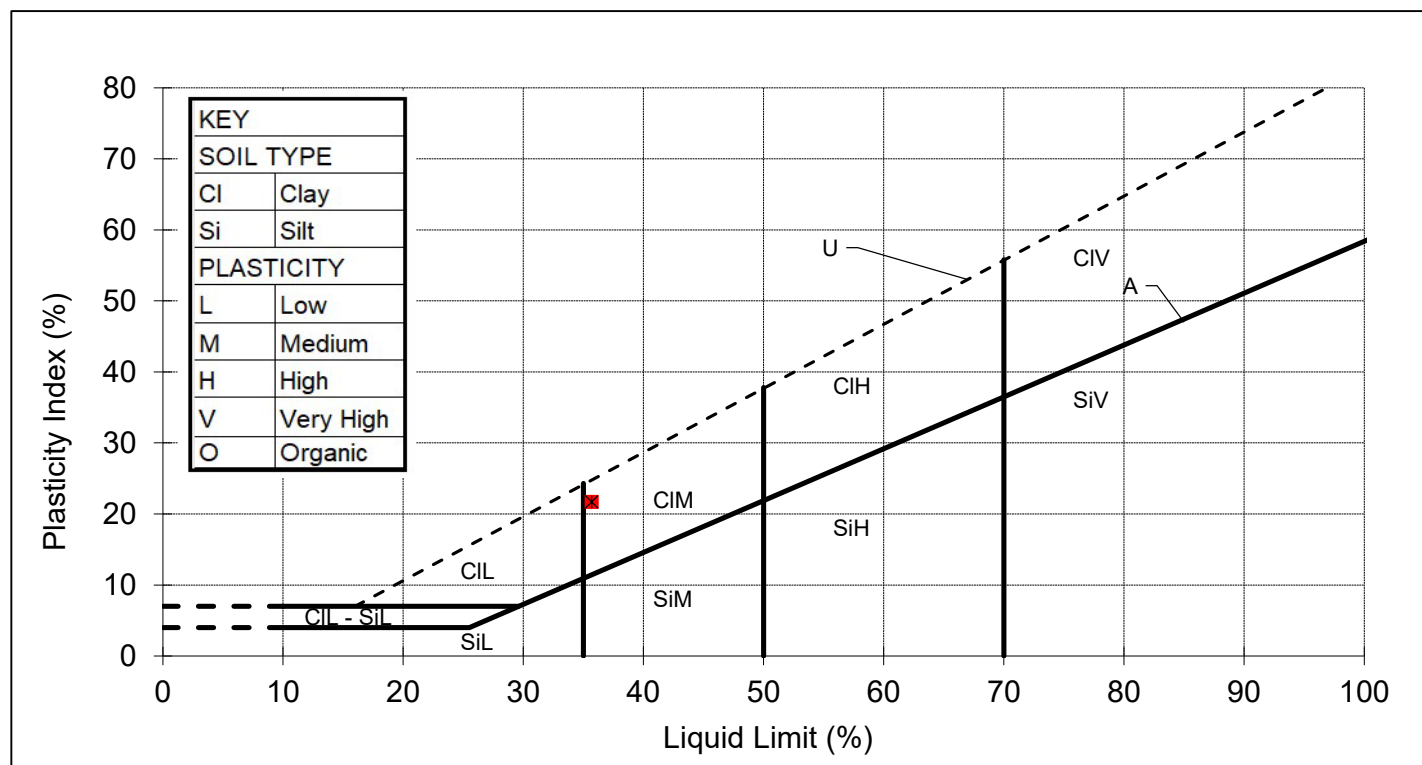
CLIENT	LK Consult Ltd
SITE	LKC 22 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE LABEL	W2 1.7-2.0m	DATE SAMPLED	Not advised
SAMPLE No.	115906	DATE RECEIVED	23-Aug-22
DATE TESTED	31-Aug-22	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)	Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	17.5	33.5	
Determination 2 (avg)	17.3	33.4	

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
19.1	36	14	22	81



REMARKS

SIGNED

NAME

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

13-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.3 (30° FALL CONE) 1 POINT METHOD

PLASTIC LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014

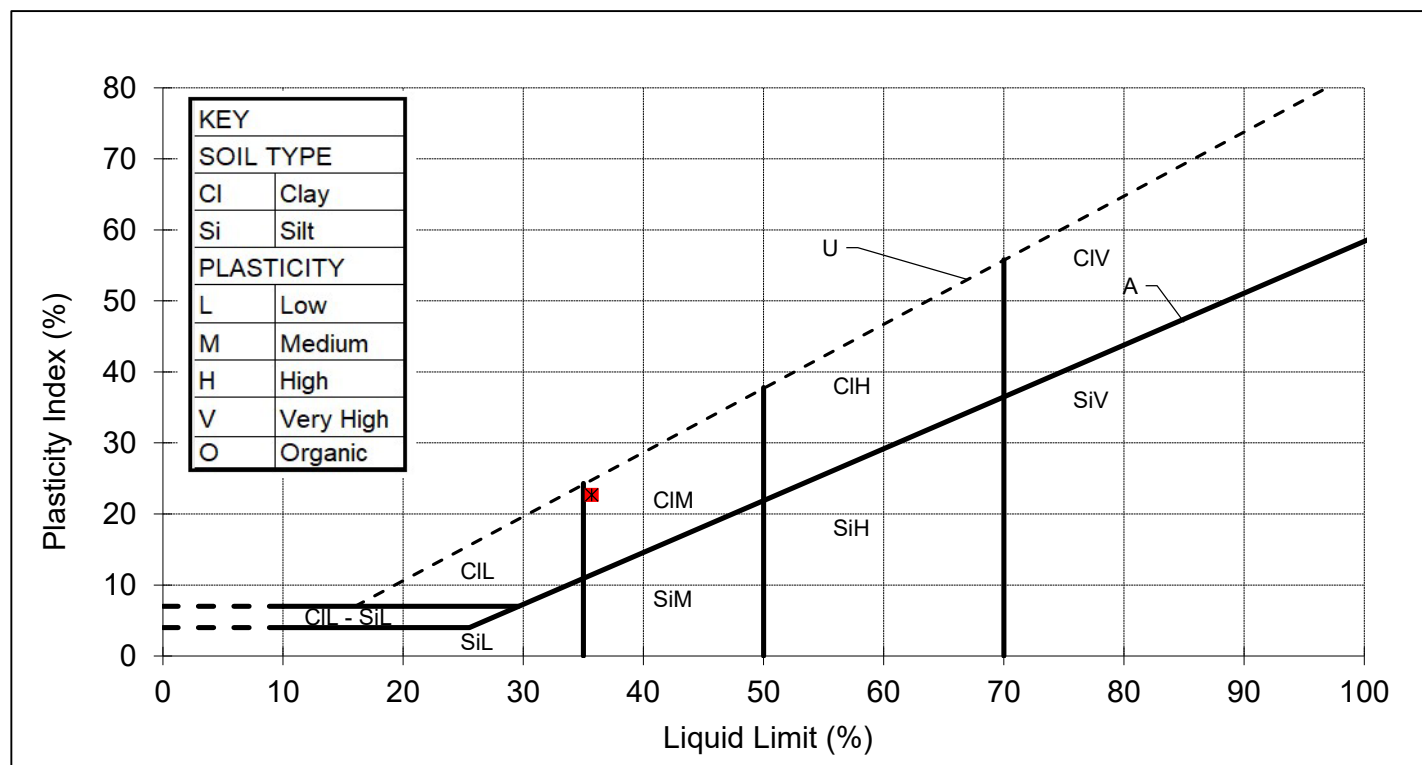
CLIENT	LK Consult Ltd
SITE	LKC 22 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE LABEL	W3 2.5-3.0m	DATE SAMPLED	Not advised
SAMPLE No.	115907	DATE RECEIVED	23-Aug-22
DATE TESTED	31-Aug-22	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)	Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	19.2	35.1	
Determination 2 (avg)	19.1	35.1	

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
16.1	36	13	23	85



REMARKS

SIGNED

NAME

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

13-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014

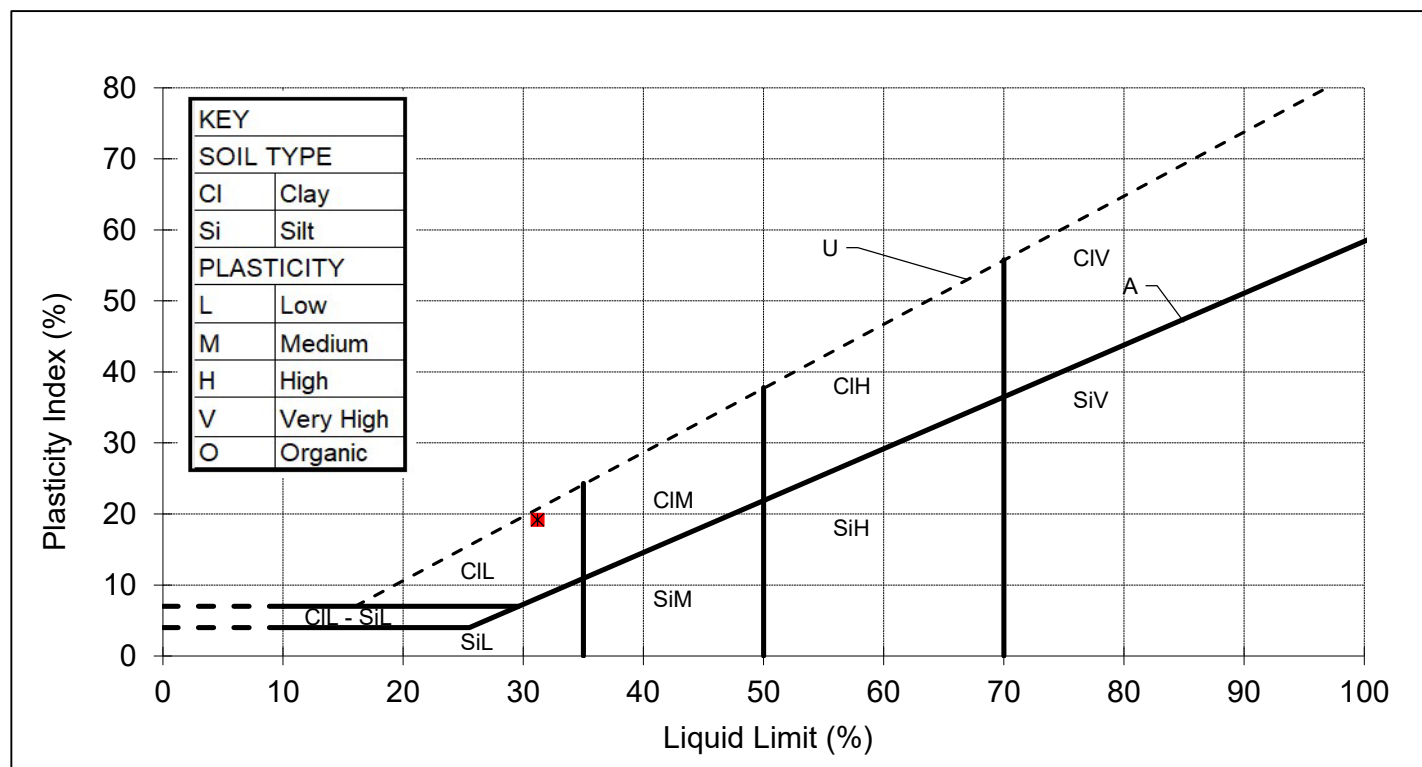
CLIENT	LK Consult Ltd
SITE	LKC 22 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE LABEL	W4 1.7-2.0m	DATE SAMPLED	Not advised
SAMPLE No.	115908	DATE RECEIVED	23-Aug-22
DATE TESTED	31-Aug-22	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)	Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	21.7	33.5	
Determination 2 (avg)	21.7	33.5	

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
16.5	31	12	19	86



REMARKS

SIGNED

NAME

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

13-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.3 (30° FALL CONE) 1 POINT METHOD

PLASTIC LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014

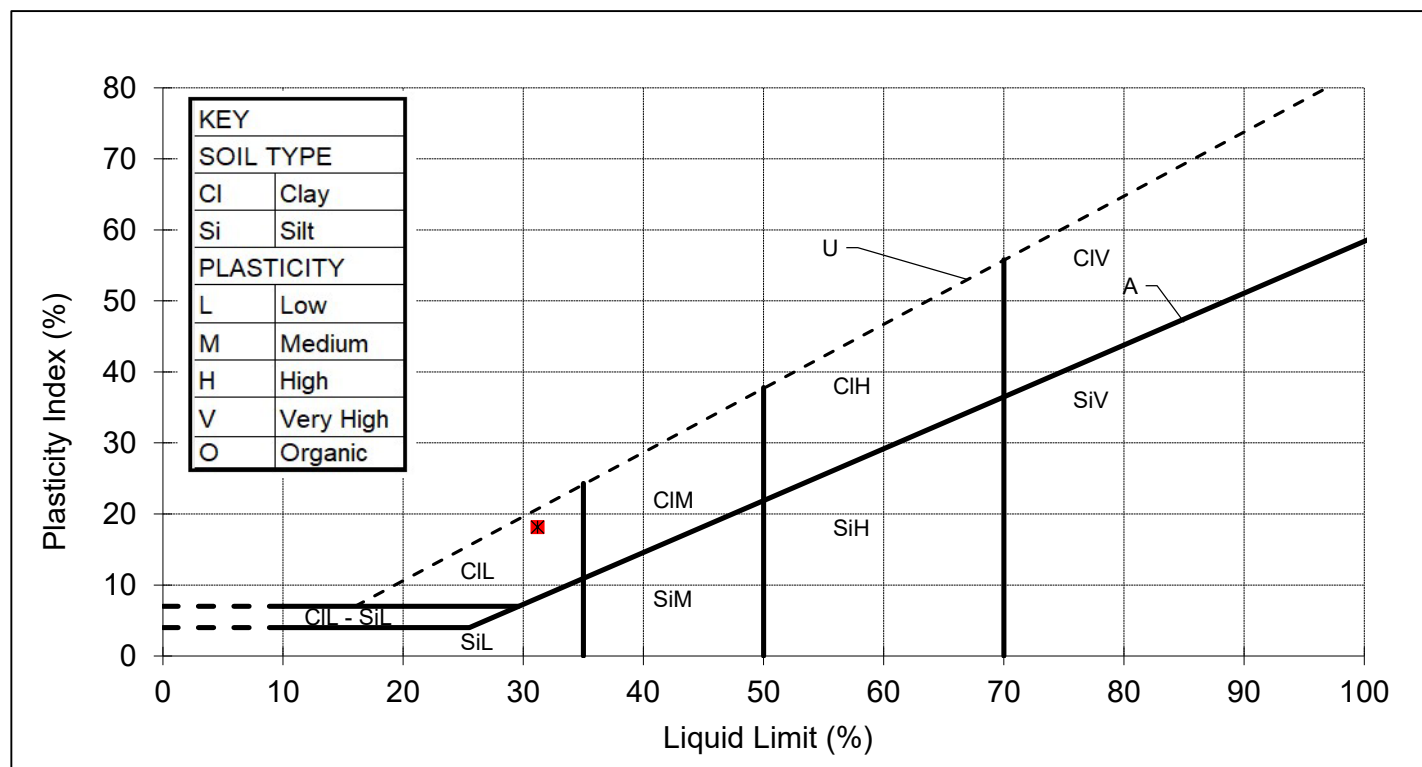
CLIENT	LK Consult Ltd
SITE	LKC 22 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE LABEL	W5 2.7-3.0m	DATE SAMPLED	Not advised
SAMPLE No.	115909	DATE RECEIVED	23-Aug-22
DATE TESTED	31-Aug-22	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)	Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	20.8	31.6	
Determination 2 (avg)	20.7	31.5	

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
14.9	31	13	18	90



REMARKS

SIGNED

NAME

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

13-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS EN ISO 17892-8:2018

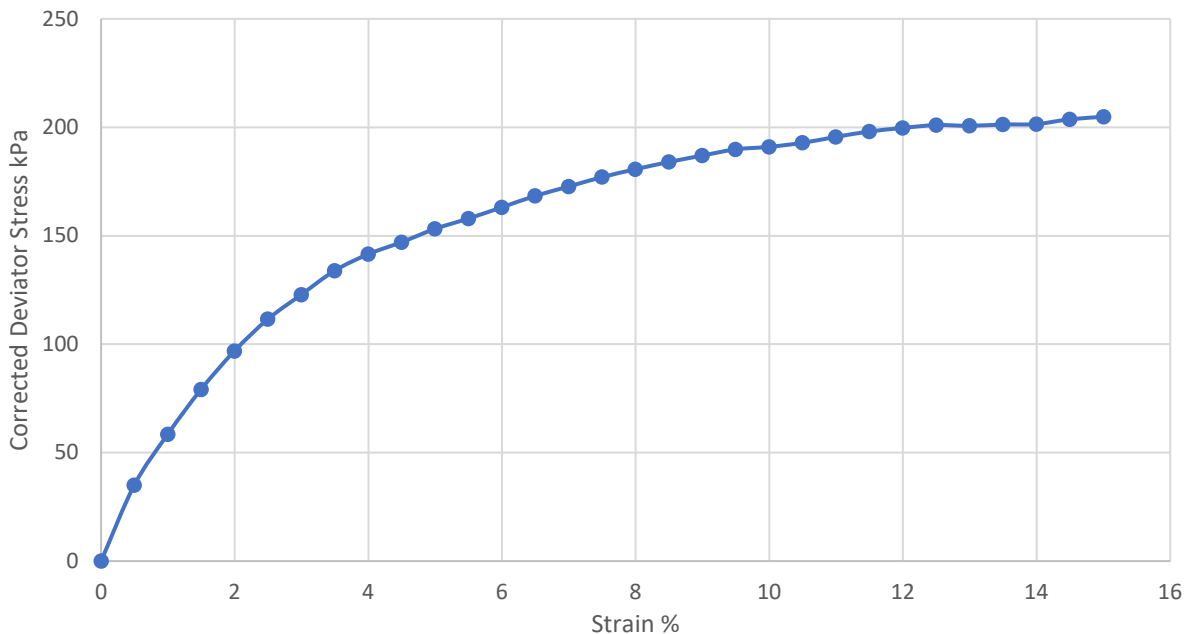
CLIENT	LK Consult Ltd
SITE	LKC 21 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE LABEL	B1 3.2-3.65m	DATE SAMPLED	Not advised
LAB SAMPLE No.	115885	DATE RECEIVED	23-Aug-22
DATE TESTED	06-Sep-22	SAMPLED BY	Client
MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

INITIAL CONDITIONS

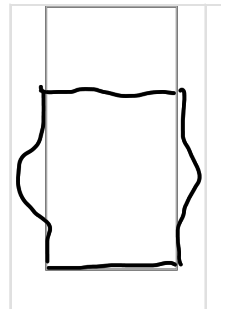
Specimen Location 	Sample Length (mm)	440	Specimen depth from top of Sample (mm)	15
	Sample Orientation	Vertical	Specimen Condition	Undisturbed
	Specimen Length (mm)	203	Specimen Water Content (%)	10.6
	Specimen Diameter (mm)	102	Specimen Bulk Density (Mg/m3)	2.23
	Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	2.02
	Membrane Correction	3.40		

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN



TEST TYPE
SINGLE STAGE

SKETCH OF
SPECIMEN AT
FAILURE



BULGING

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength c_u (kPa)
65	15.0	2.0	205	102

Remarks/Abnormalities

Name O.P Davies BA (Hons)
(Laboratory Manager)

Signed



Date 13 September 2022

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

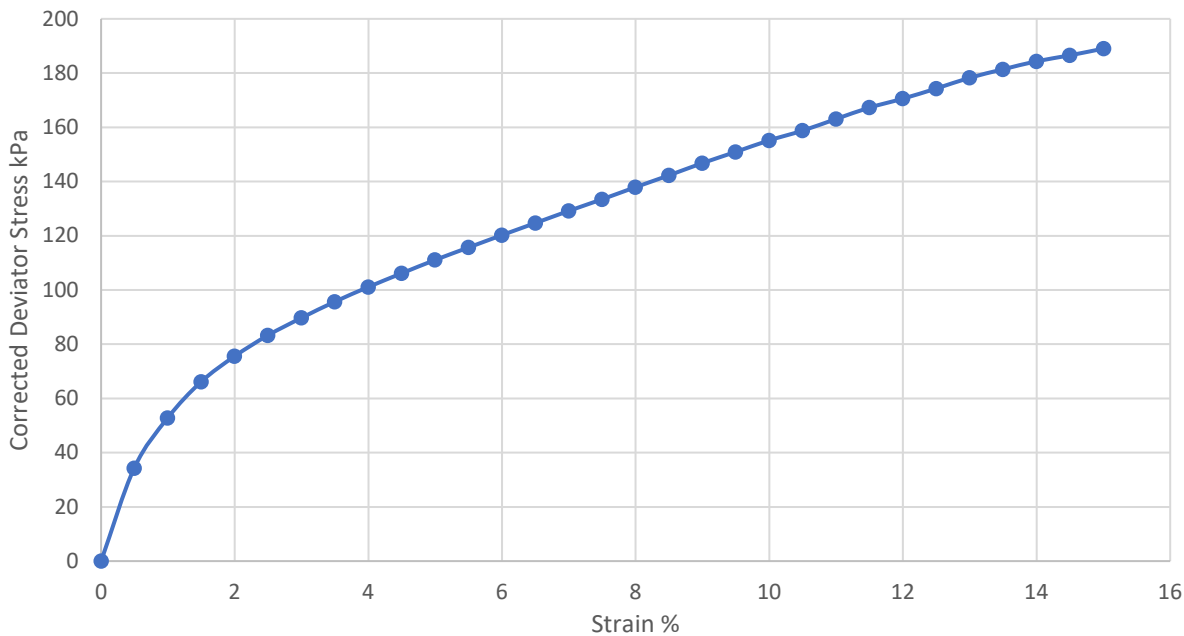
UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS EN ISO 17892-8:2018

CLIENT	LK Consult Ltd
SITE	LKC 21 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE LABEL	B2 4.3-4.75m	DATE SAMPLED	Not advised
LAB SAMPLE No.	115888	DATE RECEIVED	23-Aug-22
DATE TESTED	06-Sep-22	SAMPLED BY	Client
MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

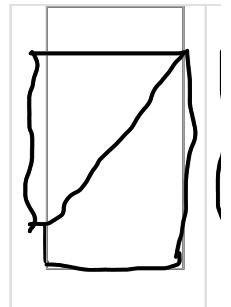
INITIAL CONDITIONS

Specimen Location 	Sample Length (mm)	300	Specimen depth from top of Sample (mm)	50
	Sample Orientation	Vertical	Specimen Condition	Undisturbed
	Specimen Length (mm)	203	Specimen Water Content (%)	12.7
	Specimen Diameter (mm)	98	Specimen Bulk Density (Mg/m3)	2.32
	Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	2.06
	Membrane Correction	3.40		

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN

TEST TYPE
SINGLE STAGE

SKETCH OF
SPECIMEN AT
FAILURE



SIMPLE_SHEAR

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
90	15.0	2.0	189	95

Remarks/Abnormalities

Name O.P Davies BA (Hons)
(Laboratory Manager)

Signed



Date 13 September 2022

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

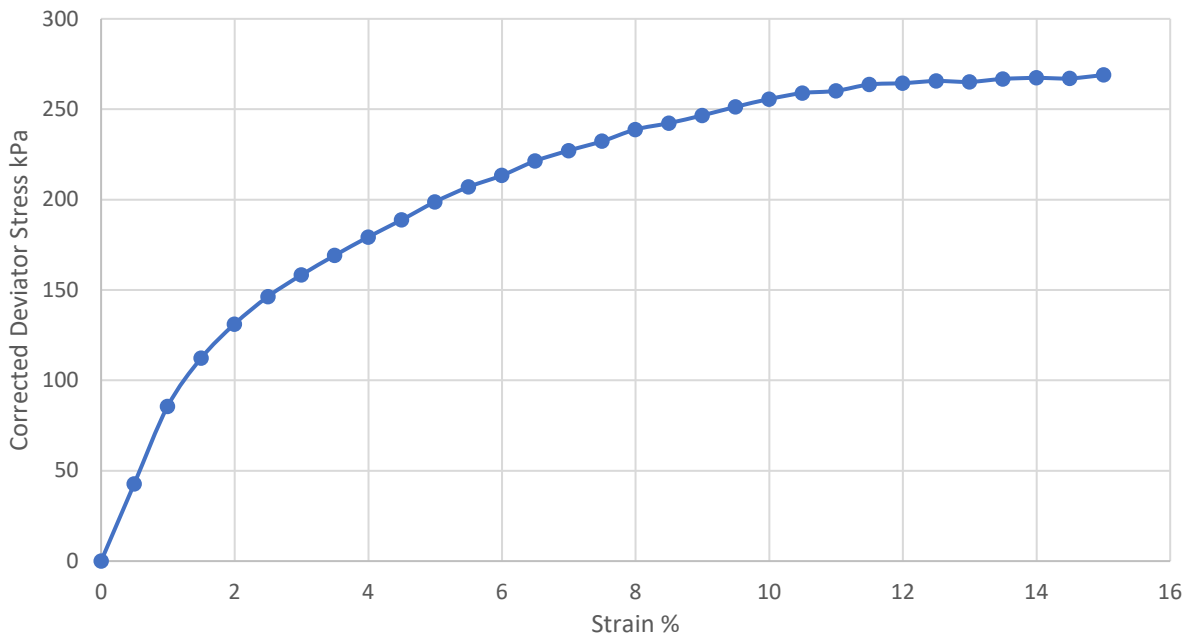
UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS EN ISO 17892-8:2018

CLIENT	LK Consult Ltd
SITE	LKC 21 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE LABEL	B2 7.0-7.45m	DATE SAMPLED	Not advised
LAB SAMPLE No.	115949	DATE RECEIVED	24-Aug-22
DATE TESTED	06-Sep-22	SAMPLED BY	Client
MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

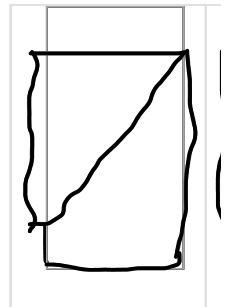
INITIAL CONDITIONS

Specimen Location		Sample Length (mm)	410	Specimen depth from top of Sample (mm)	35
		Sample Orientation	Vertical	Specimen Condition	Undisturbed
		Specimen Length (mm)	204	Specimen Water Content (%)	11.5
		Specimen Diameter (mm)	99	Specimen Bulk Density (Mg/m3)	2.28
		Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	2.04
		Membrane Correction	3.40		

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN

TEST TYPE
SINGLE STAGE

SKETCH OF SPECIMEN AT FAILURE



SIMPLE_SHEAR

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
145	15.0	2.0	269	134

Remarks/Abnormalities

Name O.P Davies BA (Hons)
(Laboratory Manager)

Signed



Date 13 September 2022

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS EN ISO 17892-8:2018

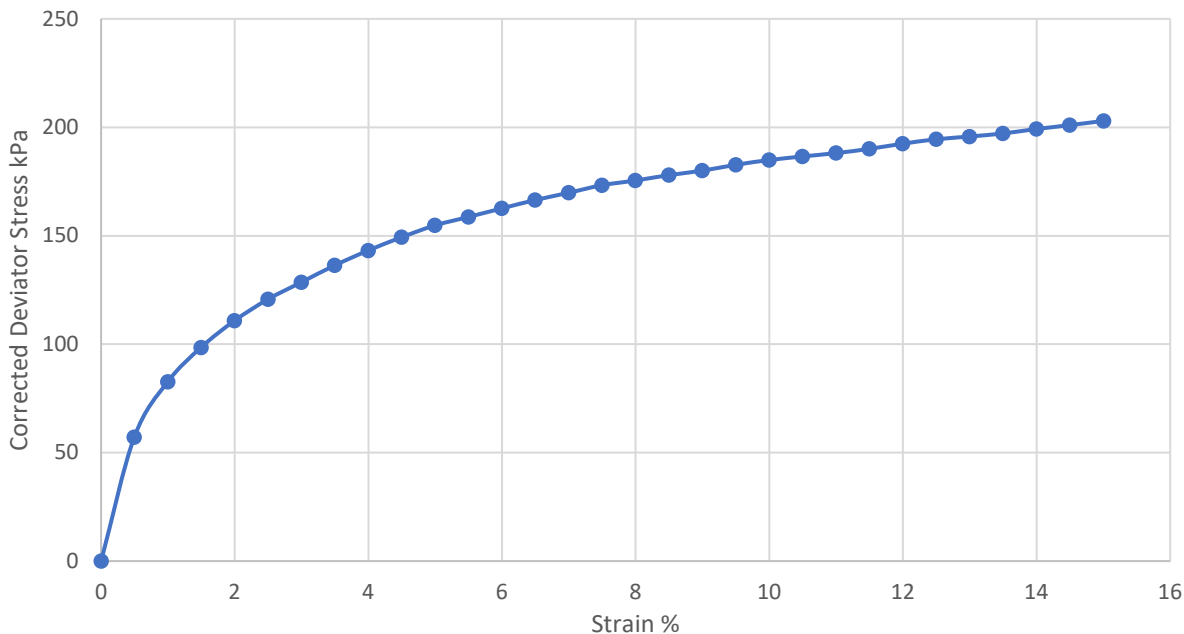
CLIENT	LK Consult Ltd
SITE	LKC 21 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE LABEL	B3 4.2-4.65m	DATE SAMPLED	Not advised
LAB SAMPLE No.	115950	DATE RECEIVED	24-Aug-22
DATE TESTED	06-Sep-22	SAMPLED BY	Client
MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

INITIAL CONDITIONS

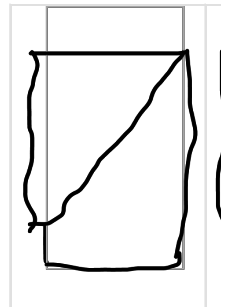
Specimen Location 	Sample Length (mm)	415	Specimen depth from top of Sample (mm)	35
	Sample Orientation	Vertical	Specimen Condition	Undisturbed
	Specimen Length (mm)	204	Specimen Water Content (%)	10.4
	Specimen Diameter (mm)	100	Specimen Bulk Density (Mg/m3)	2.28
	Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	2.07
	Membrane Correction	3.40		

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN



TEST TYPE
SINGLE STAGE

SKETCH OF
SPECIMEN AT
FAILURE



SIMPLE_SHEAR

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
88	15.0	2.0	203	101

Remarks/Abnormalities

Name O.P Davies BA (Hons)
(Laboratory Manager)

Signed



Date 13 September 2022

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

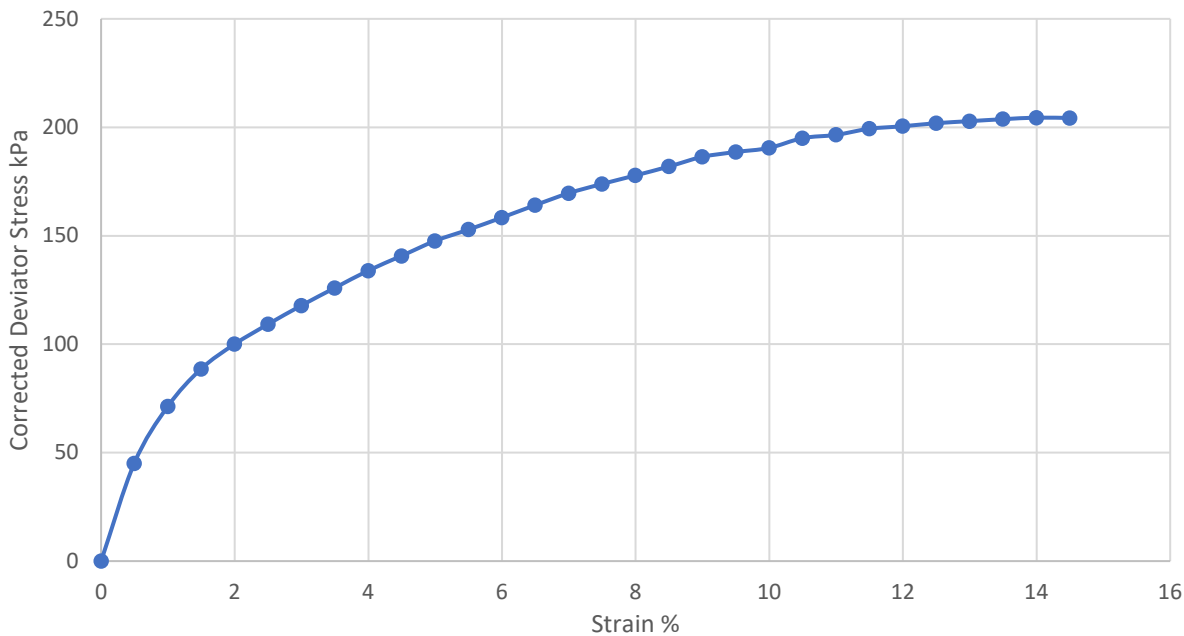
UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS EN ISO 17892-8:2018

CLIENT	LK Consult Ltd
SITE	LKC 21 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE LABEL	B4 2.2-2.65m	DATE SAMPLED	Not advised
LAB SAMPLE No.	115890	DATE RECEIVED	23-Aug-22
DATE TESTED	06-Sep-22	SAMPLED BY	Client
MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

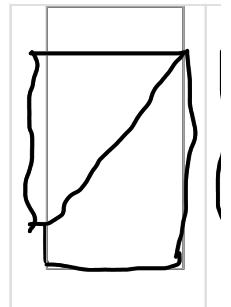
INITIAL CONDITIONS

Specimen Location 	Sample Length (mm)	440	Specimen depth from top of Sample (mm)	70
	Sample Orientation	Vertical	Specimen Condition	Undisturbed
	Specimen Length (mm)	204	Specimen Water Content (%)	13.8
	Specimen Diameter (mm)	101	Specimen Bulk Density (Mg/m3)	2.19
	Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	1.92
	Membrane Correction	3.40		

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN

TEST TYPE
SINGLE STAGE

SKETCH OF SPECIMEN AT FAILURE



SIMPLE_SHEAR

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
50	15.0	2.0	205	103

Remarks/Abnormalities

Name O.P Davies BA (Hons)
(Laboratory Manager)

Signed



Date 13 September 2022

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

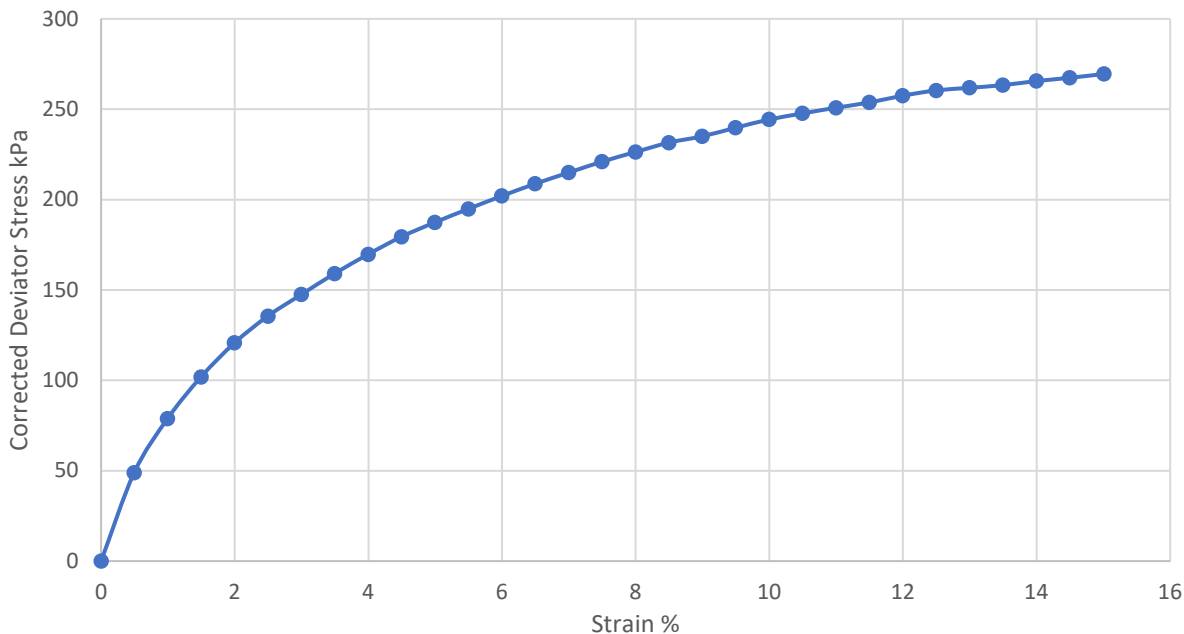
UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS EN ISO 17892-8:2018

CLIENT	LK Consult Ltd
SITE	LKC 21 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE LABEL	B5 3.2-3.65m	DATE SAMPLED	Not advised
LAB SAMPLE No.	115893	DATE RECEIVED	23-Aug-22
DATE TESTED	07-Sep-22	SAMPLED BY	Client
MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

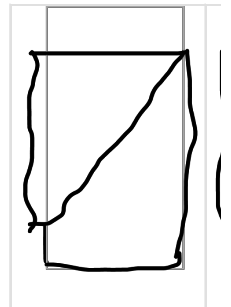
INITIAL CONDITIONS

Specimen Location		Sample Length (mm)	450	Specimen depth from top of Sample (mm)	100
		Sample Orientation	Vertical	Specimen Condition	Undisturbed
		Specimen Length (mm)	204	Specimen Water Content (%)	12.2
		Specimen Diameter (mm)	101	Specimen Bulk Density (Mg/m3)	2.25
		Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	2.01
		Membrane Correction	3.40		

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN

TEST TYPE
SINGLE STAGE

SKETCH OF
SPECIMEN AT
FAILURE



SIMPLE_SHEAR

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
70	15.0	2.0	269	135

Remarks/Abnormalities

Name O.P Davies BA (Hons)
(Laboratory Manager)

Signed



Date 13 September 2022

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

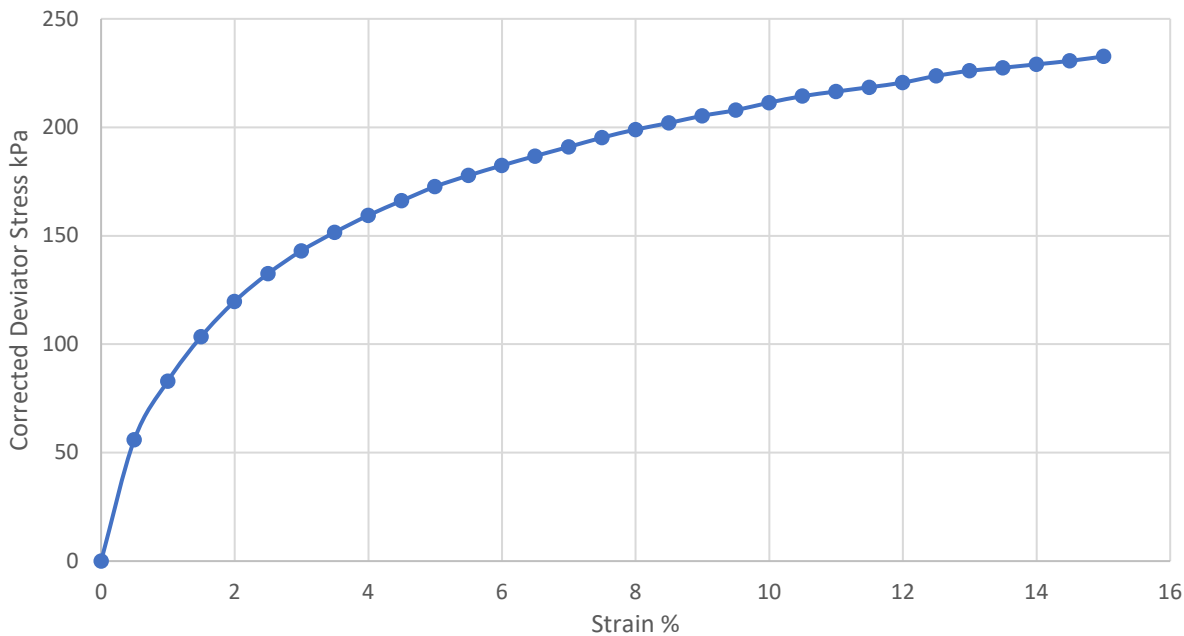
UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS EN ISO 17892-8:2018

CLIENT	LK Consult Ltd
SITE	LKC 21 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE LABEL	B6 2.2-2.65m	DATE SAMPLED	Not advised
LAB SAMPLE No.	115896	DATE RECEIVED	23-Aug-22
DATE TESTED	07-Sep-22	SAMPLED BY	Client
MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

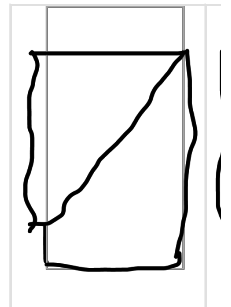
INITIAL CONDITIONS

Specimen Location		Sample Length (mm)	450	Specimen depth from top of Sample (mm)	20
		Sample Orientation	Vertical	Specimen Condition	Undisturbed
		Specimen Length (mm)	203	Specimen Water Content (%)	12.7
		Specimen Diameter (mm)	100	Specimen Bulk Density (Mg/m3)	2.28
		Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	2.02
		Membrane Correction	3.40		

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN

TEST TYPE
SINGLE STAGE

SKETCH OF SPECIMEN AT FAILURE



SIMPLE_SHEAR

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
50	15.0	2.0	233	116

Remarks/Abnormalities

Name O.P Davies BA (Hons)
(Laboratory Manager)

Signed



Date 13 September 2022

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

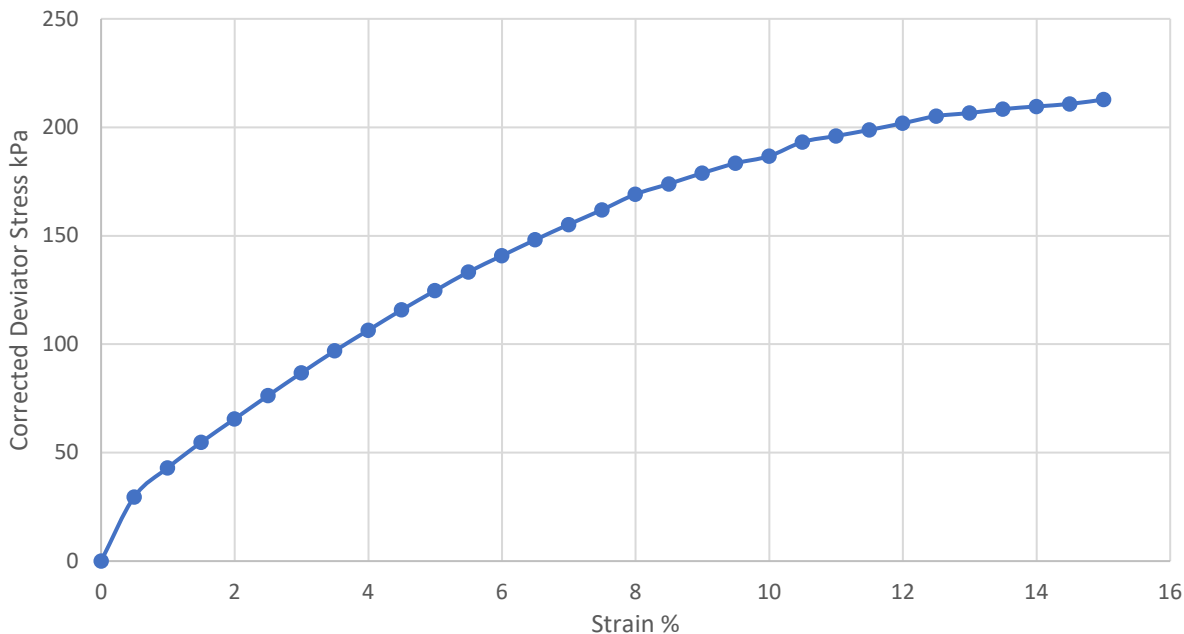
UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS EN ISO 17892-8:2018

CLIENT	LK Consult Ltd
SITE	LKC 21 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE LABEL	B7 4.5-4.95m	DATE SAMPLED	Not advised
LAB SAMPLE No.	115899	DATE RECEIVED	23-Aug-22
DATE TESTED	07-Sep-22	SAMPLED BY	Client
MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

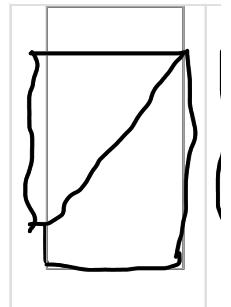
INITIAL CONDITIONS

Specimen Location		Sample Length (mm)	280	Specimen depth from top of Sample (mm)	25
		Sample Orientation	Vertical	Specimen Condition	Undisturbed
		Specimen Length (mm)	204	Specimen Water Content (%)	11.7
		Specimen Diameter (mm)	101	Specimen Bulk Density (Mg/m3)	2.31
		Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	2.07
		Membrane Correction	3.40		

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN

TEST TYPE
SINGLE STAGE

SKETCH OF SPECIMEN AT FAILURE



SIMPLE_SHEAR

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
95	15.0	2.0	213	106

Remarks/Abnormalities

Name O.P Davies BA (Hons)
(Laboratory Manager)

Signed



Date 13 September 2022

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

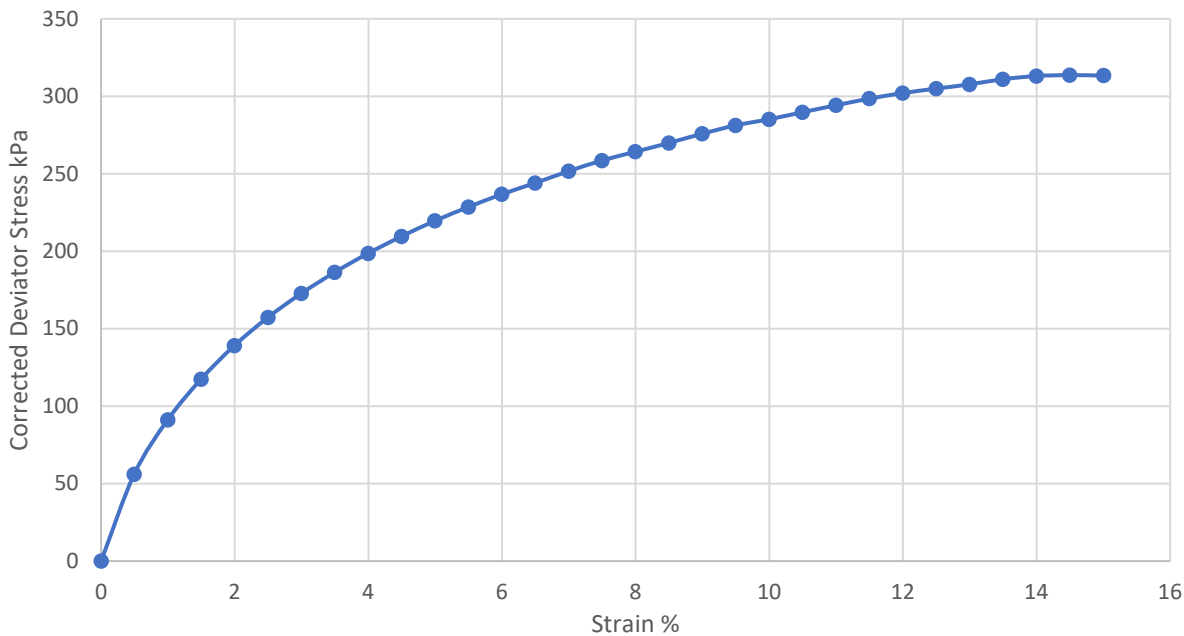
UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS EN ISO 17892-8:2018

CLIENT	LK Consult Ltd
SITE	LKC 21 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE LABEL	B8 3.3-3.75m	DATE SAMPLED	Not advised
LAB SAMPLE No.	115902	DATE RECEIVED	23-Aug-22
DATE TESTED	07-Sep-22	SAMPLED BY	Client
MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

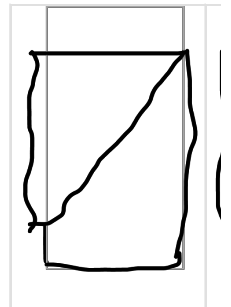
INITIAL CONDITIONS

Specimen Location		Sample Length (mm)	400	Specimen depth from top of Sample (mm)	40
		Sample Orientation	Vertical	Specimen Condition	Undisturbed
		Specimen Length (mm)	204	Specimen Water Content (%)	12.5
		Specimen Diameter (mm)	101	Specimen Bulk Density (Mg/m3)	2.23
		Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	1.98
		Membrane Correction	3.40		

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN

TEST TYPE
SINGLE STAGE

SKETCH OF SPECIMEN AT FAILURE



SIMPLE_SHEAR

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
70	14.5	2.0	314	157

Remarks/Abnormalities

Name O.P Davies BA (Hons)
(Laboratory Manager)

Signed



Date 13 September 2022

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

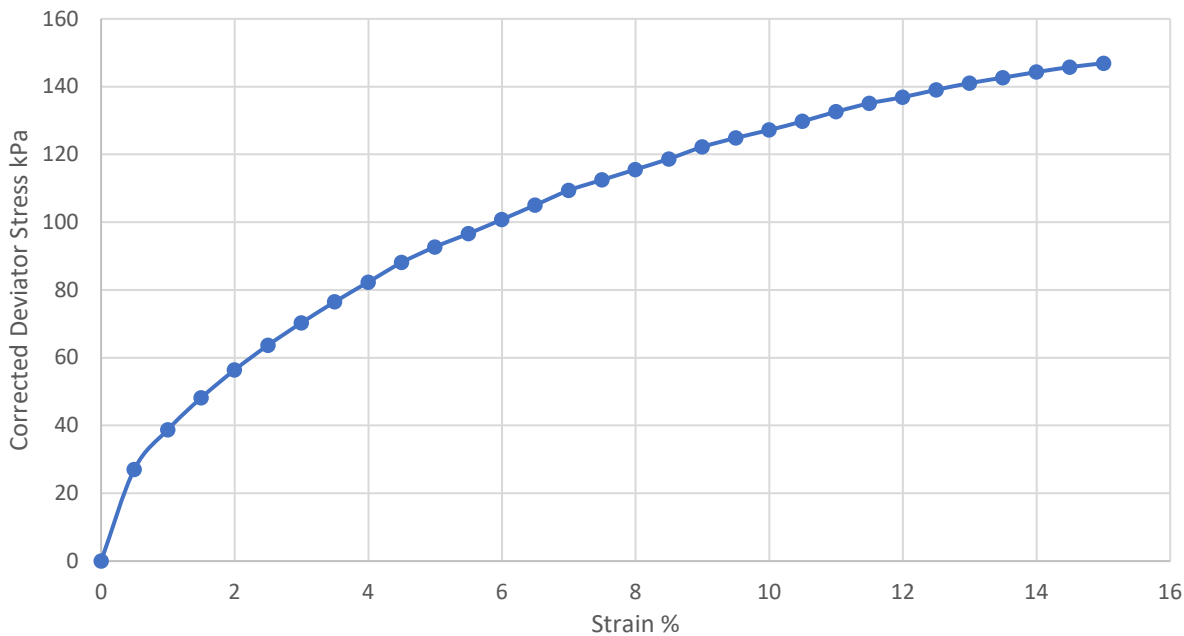
UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS EN ISO 17892-8:2018

CLIENT	LK Consult Ltd
SITE	LKC 21 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE LABEL	B8 5.4-5.85m	DATE SAMPLED	Not advised
LAB SAMPLE No.	115951	DATE RECEIVED	23-Aug-22
DATE TESTED	07-Sep-22	SAMPLED BY	Client
MATERIAL	Firm to stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

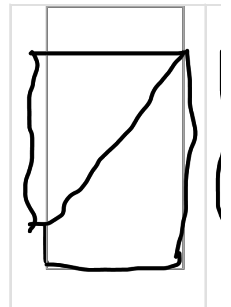
INITIAL CONDITIONS

Specimen Location 	Sample Length (mm)	395	Specimen depth from top of Sample (mm)	40
	Sample Orientation	Vertical	Specimen Condition	Undisturbed
	Specimen Length (mm)	205	Specimen Water Content (%)	11.1
	Specimen Diameter (mm)	101	Specimen Bulk Density (Mg/m3)	2.32
	Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	2.09
	Membrane Correction	3.40		

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN

TEST TYPE
SINGLE STAGE

SKETCH OF SPECIMEN AT FAILURE



SIMPLE_SHEAR

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
115	15.0	2.0	147	73

Remarks/Abnormalities

Name O.P Davies BA (Hons)
(Laboratory Manager)

Signed



Date 13 September 2022

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

DETERMINATION OF THE COMPRESSIVE STRENGTH OF INTACT ROCK CORE SPECIMENS
ASTM D7012 - 14 Method C

CLIENT	LK Consult Ltd
SITE	LKC 22 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE REFERENCE	B1 7.05-7.25m	DATE RECEIVED	23-Aug-22
SAMPLE NUMBER	115886	DATE SAMPLED	Not advised
DATE TESTED	05-Sep-22	SAMPLED BY	Client

DIMENSIONS

TESTED BY	MR	DIAMETER (mm)	75
LENGTH AFTER PREPARATION (mm)	151	LENGTH/DIAMETER RATIO	2.01

METHOD OF END PREPARATION	Saw / Grinding	TIME IN WATER PRIOR TO TEST	0 Hours
DATE OF DRILLING	Not advised	DRILLED BY	Others
MATERIAL	Rock Core	SAMPLE LOCATION	Not advised

DESCRIPTION OF CORE AFTER TEST	Split vertically from top to bottom, with no visible end effects
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COMPRESSIVE STRENGTH

LOAD AT FAILURE (kN)	41.2	MEASURED COMPRESSIVE STRENGTH (N/mm ²)	9.3
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COMPRESSIVE STRENGTH (MPa)	9.3
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Comments / Deviation from standard method / Abnormalities noted during visual inspection.
None

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

SIGNED



DATE 13-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

DETERMINATION OF THE COMPRESSIVE STRENGTH OF INTACT ROCK CORE SPECIMENS
ASTM D7012 - 14 Method C

CLIENT	LK Consult Ltd
SITE	LKC 22 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE REFERENCE	B4 6.75-6.95m	DATE RECEIVED	23-Aug-22
SAMPLE NUMBER	115892	DATE SAMPLED	Not advised
DATE TESTED	05-Sep-22	SAMPLED BY	Client

DIMENSIONS

TESTED BY	MR	DIAMETER (mm)	75
LENGTH AFTER PREPARATION (mm)	151	LENGTH/DIAMETER RATIO	2.01

METHOD OF END PREPARATION	Saw / Grinding	TIME IN WATER PRIOR TO TEST	0 Hours
DATE OF DRILLING	Not advised	DRILLED BY	Others
MATERIAL	Rock Core	SAMPLE LOCATION	Not advised

DESCRIPTION OF CORE AFTER TEST	Split vertically from top to bottom, with no visible end effects
--------------------------------	--

COMPRESSIVE STRENGTH

LOAD AT FAILURE (kN)	79.7	MEASURED COMPRESSIVE STRENGTH (N/mm ²)	18.0
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COMPRESSIVE STRENGTH (MPa)	18.0
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Comments / Deviation from standard method / Abnormalities noted during visual inspection.
None

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

SIGNED 

DATE 13-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

DETERMINATION OF THE COMPRESSIVE STRENGTH OF INTACT ROCK CORE SPECIMENS
ASTM D7012 - 14 Method C

CLIENT	LK Consult Ltd
SITE	LKC 22 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE REFERENCE	B5 10.27-10.50m	DATE RECEIVED	23-Aug-22
SAMPLE NUMBER	115894	DATE SAMPLED	Not advised
DATE TESTED	05-Sep-22	SAMPLED BY	Client

DIMENSIONS

TESTED BY	MR	DIAMETER (mm)	75
LENGTH AFTER PREPARATION (mm)	150	LENGTH/DIAMETER RATIO	2.00

METHOD OF END PREPARATION	Saw / Grinding	TIME IN WATER PRIOR TO TEST	0 Hours
DATE OF DRILLING	Not advised	DRILLED BY	Others
MATERIAL	Rock Core	SAMPLE LOCATION	Not advised

DESCRIPTION OF CORE AFTER TEST	Split vertically from top to bottom, with no visible end effects
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COMPRESSIVE STRENGTH

LOAD AT FAILURE (kN)	68.0	MEASURED COMPRESSIVE STRENGTH (N/mm ²)	15.4
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COMPRESSIVE STRENGTH (MPa)	15.4
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Comments / Deviation from standard method / Abnormalities noted during visual inspection.
None

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

SIGNED 

DATE 13-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

DETERMINATION OF THE COMPRESSIVE STRENGTH OF INTACT ROCK CORE SPECIMENS
ASTM D7012 - 14 Method C

CLIENT	LK Consult Ltd
SITE	LKC 22 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE REFERENCE	B5 11.8-11.95m	DATE RECEIVED	23-Aug-22
SAMPLE NUMBER	115895	DATE SAMPLED	Not advised
DATE TESTED	05-Sep-22	SAMPLED BY	Client

DIMENSIONS

TESTED BY	MR	DIAMETER (mm)	75
LENGTH AFTER PREPARATION (mm)	150	LENGTH/DIAMETER RATIO	2.00

METHOD OF END PREPARATION	Saw / Grinding	TIME IN WATER PRIOR TO TEST	0 Hours
DATE OF DRILLING	Not advised	DRILLED BY	Others
MATERIAL	Rock Core	SAMPLE LOCATION	Not advised

DESCRIPTION OF CORE AFTER TEST	Split vertically from top to bottom, with no visible end effects
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COMPRESSIVE STRENGTH

LOAD AT FAILURE (kN)	44.4	MEASURED COMPRESSIVE STRENGTH (N/mm ²)	10.1
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COMPRESSIVE STRENGTH (MPa)	10.1
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Comments / Deviation from standard method / Abnormalities noted during visual inspection.
None

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

SIGNED 

DATE 13-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

DETERMINATION OF THE COMPRESSIVE STRENGTH OF INTACT ROCK CORE SPECIMENS
ASTM D7012 - 14 Method C

CLIENT	LK Consult Ltd
SITE	LKC 22 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE REFERENCE	B6 12.3-12.5m	DATE RECEIVED	23-Aug-22
SAMPLE NUMBER	115898	DATE SAMPLED	Not advised
DATE TESTED	05-Sep-22	SAMPLED BY	Client

DIMENSIONS

TESTED BY	MR	DIAMETER (mm)	75
LENGTH AFTER PREPARATION (mm)	150	LENGTH/DIAMETER RATIO	2.00

METHOD OF END PREPARATION	Saw / Grinding	TIME IN WATER PRIOR TO TEST	0 Hours
DATE OF DRILLING	Not advised	DRILLED BY	Others
MATERIAL	Rock Core	SAMPLE LOCATION	Not advised

DESCRIPTION OF CORE AFTER TEST	Split vertically from top to bottom, with no visible end effects
--------------------------------	--

COMPRESSIVE STRENGTH

LOAD AT FAILURE (kN)	49.0	MEASURED COMPRESSIVE STRENGTH (N/mm ²)	11.1
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COMPRESSIVE STRENGTH (MPa)	11.1
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Comments / Deviation from standard method / Abnormalities noted during visual inspection.
None

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

SIGNED 

DATE 13-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

DETERMINATION OF THE COMPRESSIVE STRENGTH OF INTACT ROCK CORE SPECIMENS
ASTM D7012 - 14 Method C

CLIENT	LK Consult Ltd
SITE	LKC 22 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE REFERENCE	B7 9.65-9.90m	DATE RECEIVED	23-Aug-22
SAMPLE NUMBER	115900	DATE SAMPLED	Not advised
DATE TESTED	05-Sep-22	SAMPLED BY	Client

DIMENSIONS

TESTED BY	MR	DIAMETER (mm)	80
LENGTH AFTER PREPARATION (mm)	160	LENGTH/DIAMETER RATIO	2.00

METHOD OF END PREPARATION	Saw / Grinding	TIME IN WATER PRIOR TO TEST	0 Hours
DATE OF DRILLING	Not advised	DRILLED BY	Others
MATERIAL	Rock Core	SAMPLE LOCATION	Not advised

DESCRIPTION OF CORE AFTER TEST	Split vertically from top to bottom, with no visible end effects
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COMPRESSIVE STRENGTH

LOAD AT FAILURE (kN)	71.6	MEASURED COMPRESSIVE STRENGTH (N/mm ²)	14.2
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COMPRESSIVE STRENGTH (MPa)	14.2
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Comments / Deviation from standard method / Abnormalities noted during visual inspection.
None

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

SIGNED



DATE 13-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

DETERMINATION OF THE COMPRESSIVE STRENGTH OF INTACT ROCK CORE SPECIMENS
ASTM D7012 - 14 Method C

CLIENT	LK Consult Ltd
SITE	LKC 22 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE REFERENCE	B7 12.80-13.0m	DATE RECEIVED	23-Aug-22
SAMPLE NUMBER	115901	DATE SAMPLED	Not advised
DATE TESTED	05-Sep-22	SAMPLED BY	Client

DIMENSIONS

TESTED BY	MR	DIAMETER (mm)	80
LENGTH AFTER PREPARATION (mm)	160	LENGTH/DIAMETER RATIO	2.00

METHOD OF END PREPARATION	Saw / Grinding	TIME IN WATER PRIOR TO TEST	0 Hours
DATE OF DRILLING	Not advised	DRILLED BY	Others
MATERIAL	Rock Core	SAMPLE LOCATION	Not advised

DESCRIPTION OF CORE AFTER TEST	Split vertically from top to bottom, with no visible end effects
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COMPRESSIVE STRENGTH

LOAD AT FAILURE (kN)	48.7	MEASURED COMPRESSIVE STRENGTH (N/mm ²)	9.7
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COMPRESSIVE STRENGTH (MPa)	9.7
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Comments / Deviation from standard method / Abnormalities noted during visual inspection.
None

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

SIGNED 

DATE 13-Sep-22

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

DETERMINATION OF THE COMPRESSIVE STRENGTH OF INTACT ROCK CORE SPECIMENS
ASTM D7012 - 14 Method C

CLIENT	LK Consult Ltd
SITE	LKC 22 1332 - Alder Hey, Liverpool
JOB NUMBER	MRN 4310/120

SAMPLE REFERENCE	B8 14.8-14.98m	DATE RECEIVED	23-Aug-22
SAMPLE NUMBER	115904	DATE SAMPLED	Not advised
DATE TESTED	05-Sep-22	SAMPLED BY	Client

DIMENSIONS

TESTED BY	MR	DIAMETER (mm)	80
LENGTH AFTER PREPARATION (mm)	160	LENGTH/DIAMETER RATIO	2.00

METHOD OF END PREPARATION	Saw / Grinding	TIME IN WATER PRIOR TO TEST	0 Hours
DATE OF DRILLING	Not advised	DRILLED BY	Others
MATERIAL	Rock Core	SAMPLE LOCATION	Not advised

DESCRIPTION OF CORE AFTER TEST	Split vertically from top to bottom, with no visible end effects
--------------------------------	--

COMPRESSIVE STRENGTH

LOAD AT FAILURE (kN)	52.3	MEASURED COMPRESSIVE STRENGTH (N/mm ²)	10.4
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COMPRESSIVE STRENGTH (MPa)	10.4
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Comments / Deviation from standard method / Abnormalities noted during visual inspection.
None

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

SIGNED



DATE 13-Sep-22



Final Report

Report No.:	22-31938-1		
Initial Date of Issue:	26-Aug-2022		
Client	LK Consult		
Client Address:	Unit 29 Eton Business Park Eton Hill Road Radcliffe Manchester Lancashire M26 2ZS		
Contact(s):	Contaminated Land Michelle Thorniley		
Project	LKC 22 1332 Alder Hey, Liverpool		
Quotation No.:		Date Received:	22-Aug-2022
Order No.:	740508	Date Instructed:	22-Aug-2022
No. of Samples:	4		
Turnaround (Wkdays):	5	Results Due:	26-Aug-2022
Date Approved:	26-Aug-2022		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Soil

Project: LKC 22 1332 Alder Hey, Liverpool

Client: LK Consult	Chemtest Job No.:				22-31938	22-31938	22-31938	22-31938
Quotation No.:	Chemtest Sample ID.:				1491919	1491920	1491921	1491922
	Client Sample ID.:				ST2M	ST1E	B2	B6
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.6	1.0	1.2	1.2
	Bottom Depth (m):				1.0	1.7	1.65	1.65
	Date Sampled:				03-Aug-2022	04-Aug-2022	26-Jul-2022	26-Jul-2022
Determinand	Accred.	SOP	Units	LOD				
Moisture	N	2030	%	0.020	9.3	7.6	8.3	13
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Clay	Clay	Clay	Sand
pH (2.5:1)	N	2010		4.0	8.5	8.3	8.9	9.0
Magnesium (Water Soluble)	M	2120	mg/kg	20	< 20	< 20	< 20	< 20
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.069	< 0.010	0.012	0.025
Total Sulphur	M	2175	%	0.010	0.10	0.028	0.054	0.069
Chloride (Water Soluble)	M	2220	g/l	0.010	< 0.010	0.010	0.083	0.26
Nitrate (Water Soluble)	N	2220	g/l	0.010	< 0.010	< 0.010	< 0.010	0.070
Ammonium (Extractable)	M	2425	mg/kg	0.50	1.0	0.96	0.79	2.7
Sulphate (Total)	U	2430	%	0.010	0.13	0.040	0.016	0.057

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measurement by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2425	Extractable Ammonium in soils	Ammonium	Extraction with potassium chloride solution / analysis by 'Aquakem 600' Discrete Analyser using sodium salicylate and sodium dichloroisocyanurate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com

Appendix E

Lightweight Deflectometer Test Results

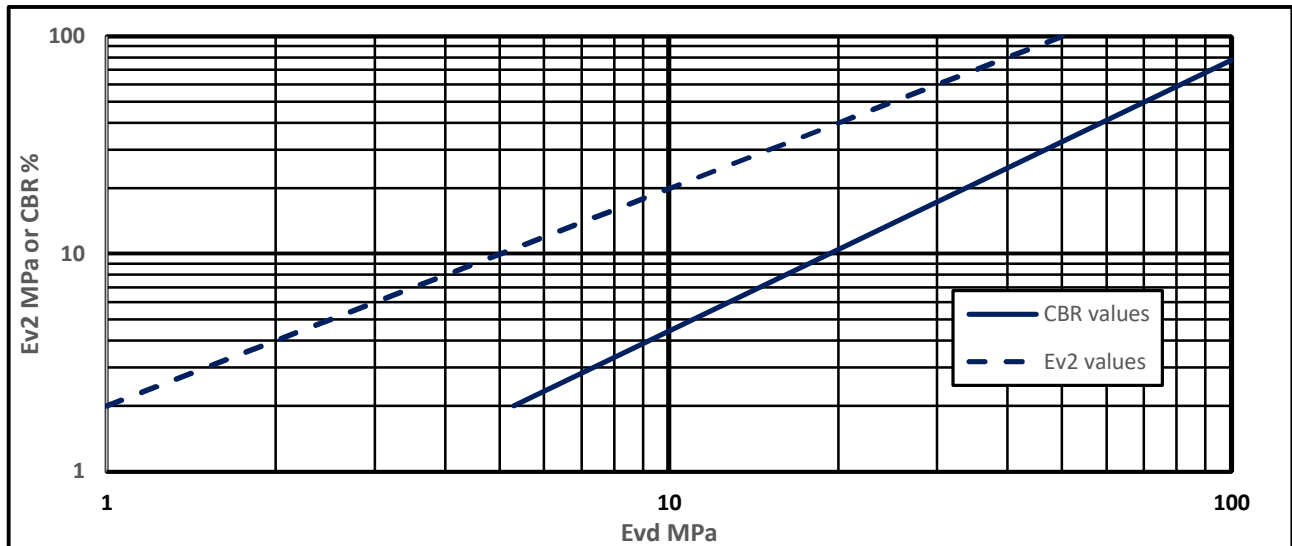
**MEASURING DEFLECTIONS USING A PORTABLE IMPULSE PLATE LOAD DEVICE
(LIGHT WEIGHT DEFLECTOMETER) ASTM E2835-21**

SITE	Alder Hey, Liverpool		
JOB NUMBER	LKC 22 1332		
MATERIAL TYPE			
TEST LOCATION	See below	LOADING DEVICE	7597
TEST DATE	03-Aug-22	PLATE SIZE (mm)	300 diameter
TEST DEPTH	0.0-1.0mbgl	DEVICE TYPE	Zorn ZFG 3.0
MOISTURE CONTENT	Not Required	CONTACT STRESS	100 kPa
TEMPERATURE		CALIBRATION	Manufacturer annual off-site

Test Location	Ave deflection (mm)	S/V ⁺ (ms)	Ev ^{d+} (Mpa)	Ev2* (Mpa)	CBR* (%)
ST1M 0.0m	1.564	3.586	14.39	28.78	7
ST1M 0.5m	0.674	2.534	33.38	66.76	20
ST1M 1.0m	1.074	3.856	20.95	41.9	11
ST1E 0.0m	0.42	2.212	53.57	107.14	36
ST1E 0.5m	0.731	2.758	30.78	61.56	18
ST1E 1.0m	1.632	4.253	13.79	27.58	7

⁺ Values of S/V and Ev^d are calculated by proprietry software provided by Zorn, the equipment manufacturer.

* Values for CBR and Ev2 are based on correlations given by Zorn, as shown below, and should be used with care as a first approximation only. The CBR correlation is invalid for Ev^d values of less than 5MPa



REMARKS

The design of LWDs is not standardised with a key difference being the way deflection is measured following the impulse load. Care is required when comparing results from equipment from differenet manufacturers.

NAME RW

03-Aug-22

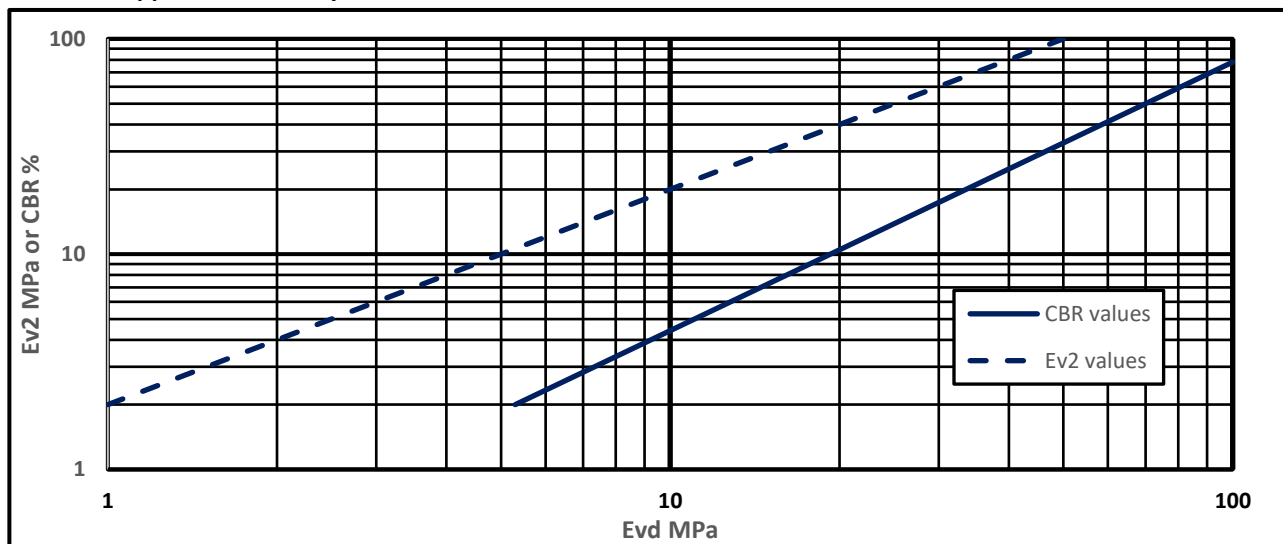
MEASURING DEFLECTIONS USING A PORTABLE IMPULSE PLATE LOAD DEVICE
(LIGHT WEIGHT DEFLECTOMETER) ASTM E2835-21

SITE	Alder Hey, Liverpool		
JOB NUMBER	LKC 22 1332		
MATERIAL TYPE			
TEST LOCATION	See below	LOADING DEVICE	7597
TEST DATE	02-Aug-22	PLATE SIZE (mm)	300 diameter
TEST DEPTH	0.0-1.0mbgl	DEVICE TYPE	Zorn ZFG 3.0
MOISTURE CONTENT	Not Required	CONTACT STRESS	100 kPa
TEMPERATURE		CALIBRATION	Manufacturer annual off-site

Test Location	Ave deflection (mm)	S/V ⁺ (ms)	Evd ⁺ (Mpa)	Ev2* (Mpa)	CBR* (%)
ST2S 0.0m	1.067	3.307	21.09	42.18	11
ST2S 0.5m	1.1914	4.51	11.28	22.56	5
ST2S 1.0m	2.294	5.215	9.81	19.62	4
ST2N 0.0m	1.994	5.604	11.28	22.56	5
ST2N 0.5m	2.085	5.509	10.79	21.58	5
ST2N 1.0m	1.271	3.842	17.7	35.4	9

⁺ Values of S/V and Evd are calculated by proprietry software provided by Zorn, the equipment manufacturer.

* Values for CBR and Ev2 are based on correlations given by Zorn, as shown below, and should be used with care as a first approximation only. The CBR correlation is invalid for Evd values of less than 5MPa



REMARKS

The design of LWDs is not standardised with a key difference being the way deflection is measured following the impulse load. Care is required when comparing results from equipment from different manufacturers.

NAME RW

02-Aug-22

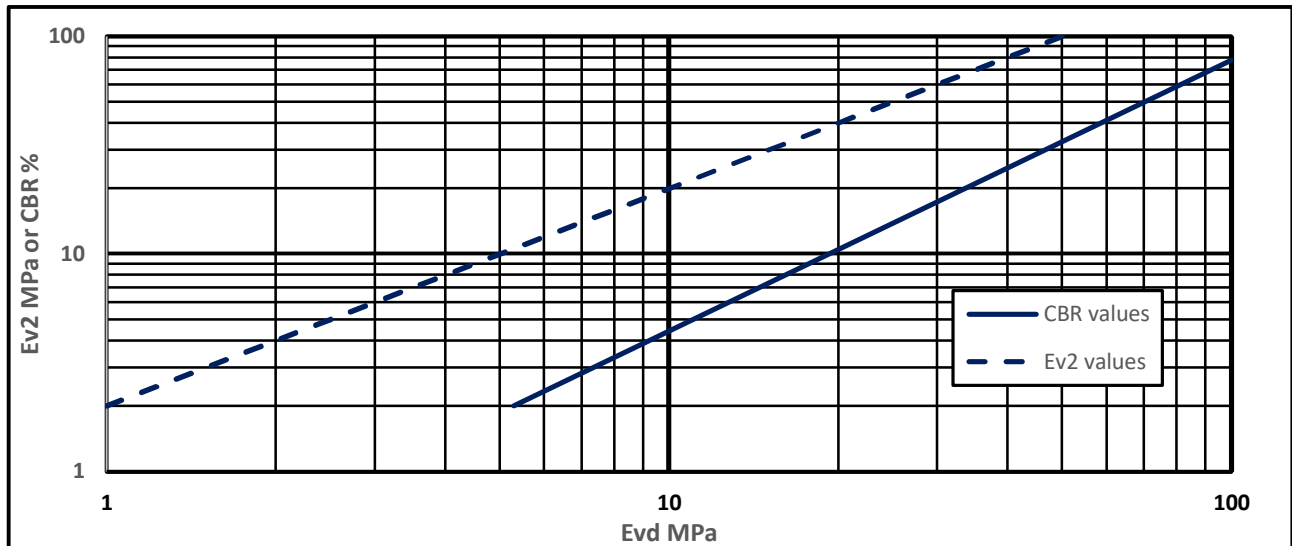
**MEASURING DEFLECTIONS USING A PORTABLE IMPULSE PLATE LOAD DEVICE
(LIGHT WEIGHT DEFLECTOMETER) ASTM E2835-21**

SITE	Alder Hey, Liverpool		
JOB NUMBER	LKC 22 1332		
MATERIAL TYPE			
TEST LOCATION	See below	LOADING DEVICE	7597
TEST DATE	03-Aug-22	PLATE SIZE (mm)	300 diameter
TEST DEPTH	0.0-1.0mbgl	DEVICE TYPE	Zorn ZFG 3.0
MOISTURE CONTENT	Not Required	CONTACT STRESS	100 kPa
TEMPERATURE		CALIBRATION	Manufacturer annual off-site

Test Location	Ave deflection (mm)	S/V ⁺ (ms)	Ev ^{d+} (Mpa)	Ev2* (Mpa)	CBR* (%)
ST3S 0.0m	0.279	2.254	80.65	161.3	60
ST3S 0.5m	1.793	4.983	12.55	25.1	6
ST3S 1.0m	1.55	3.941	14.52	29.04	7
ST3N 0.0m	1.956	5.026	11.35	22.7	5
ST3N 0.5m	1.06	3.553	21.23	42.46	11
ST3N 1.0m	1.958	5.139	11.49	22.98	5

⁺ Values of S/V and Ev^d are calculated by proprietry software provided by Zorn, the equipment manufacturer.

* Values for CBR and Ev2 are based on correlations given by Zorn, as shown below, and should be used with care as a first approximation only. The CBR correlation is invalid for Ev^d values of less than 5MPa



REMARKS

The design of LWDs is not standardised with a key difference being the way deflection is measured following the impulse load. Care is required when comparing results from equipment from differenet manufacturers.

NAME RW

03-Aug-22

Appendix F

Generic Assessment Criteria Values

CATEGORY 4 SCREENING LEVELS

Substance	Residential (with home- grown produce)	Residential (without home- grown produce)	Allotments	Commercial	Public Open Space 1	Public Open Space 2
Arsenic	37 mg/kg	40 mg/kg	49 mg/kg	640 mg/kg	79 mg/kg	170 mg/kg
Benzene	0.87 mg/kg	3.3 mg/kg	0.18 mg/kg	98 mg/kg	140 mg/kg	230 mg/kg
Benzo(a)pyrene	5.0 mg/kg	5.3 mg/kg	5.7 mg/kg	77 mg/kg	10 mg/kg	21 mg/kg
Cadmium	22 mg/kg	150 mg/kg	3.9 mg/kg	410 mg/kg	220 mg/kg	880 mg/kg
Chromium VI	21 mg/kg	21 mg/kg	170 mg/kg	49 mg/kg	21 mg/kg	250 mg/kg
Lead	200 mg/kg	310 mg/kg	80 mg/kg	2300 mg/kg	630 mg/kg	1300 mg/kg

Tetrachlorethene (PCE) – 1% SOM	0.31 mg/kg	0.32 mg/kg	2.0 mg/kg	24 mg/kg	3,200 mg/kg	1,400 mg/kg
Tetrachlorethene (PCE) – 2.5% SOM	0.70 mg/kg	0.71 mg/kg	4.8 mg/kg	55 mg/kg	3,300 mg/kg	1,900 mg/kg
Tetrachlorethene (PCE) – 6% SOM	1.6 mg/kg	1.6 mg/kg	11 mg/kg	130 mg/kg	3,400 mg/kg	2,500 mg/kg
Trichlorethene (TCE) – 1% SOM	0.0093 mg/kg	0.0097 mg/kg	0.032 mg/kg	0.73 mg/kg	76 mg/kg	41 mg/kg
Trichlorethene (TCE) – 2.5% SOM	0.020 mg/kg	0.020 mg/kg	0.072 mg/kg	1.5 mg/kg	78 mg/kg	54 mg/kg
Trichlorethene (TCE) – 6% SOM	0.043 mg/kg	0.045 mg/kg	0.16 mg/kg	3.4 mg/kg	79 mg/kg	69 mg/kg
Vinyl Chloride (VC) – 1%SOM	0.0064 mg/kg	0.015 mg/kg	0.0017 mg/kg	1.1 mg/kg	7.8 mg/kg	18 mg/kg
Vinyl Chloride (VC) – 2.5%SOM	0.010 mg/kg	0.019 mg/kg	0.0031 mg/kg	1.4 mg/kg	7.8 mg/kg	19 mg/kg
Vinyl Chloride (VC) – 6%SOM	0.017 mg/kg	0.029 mg/kg	0.0058 mg/kg	2.2 mg/kg	7.8 mg/kg	19 mg/kg

Summary Table for the Generic Assessment Criteria for Human Health Risk Assessment Land Quality Management (LQM) S4ULs.

All GAC are based on sandy
loam soils with a pH 7.

All GAC are based on sandy loam soils with a pH 7.			LQM Generic Assessment Criteria (mg/kg) Dry weight soil					
Contaminant		SOM	Res +	Res -	Allot.	Comm.	POS _{resi}	POS _{park}
Metals	Inorganic Arsenic	6%	37	40	43	640	79	170
	Beryllium	6%	1.7	1.7	35	12	2.2	63
	Boron	6%	290	11,000	45	240,000	21,000	46,000
	Cadmium	6%	11	85	1.9	190	120	532
	Chromium (III)	6%	910	910	18,000	8,600	1,500	33,000
	Chromium (VI)	6%	6.0	6.0	1.8	33	7.7	220
	Copper	6%	2,400	7,100	520	68,000	12,000	44,000
	Elemental Mercury	6%	1.2	1.2	21	58 (25.8) ^{vap}	16	30 (25.8) ^{vap}
	Inorganic Mercury	6%	40	56	19	1,100	120	240
	Methylmercury	6%	11	15	6.0	320	40	68
	Nickel (update 2015)	6%	126	181	53	983	231	804
	Selenium	6%	250	430	88	12,000	1,100	1,800
	Vanadium	6%	410	1,200	91	9,000	2,000	5,000
Zinc	6%	3,700	40,000	620	730,000	81,000	170,000	
BTEX Compounds	Benzene	1%	0.087	0.38	0.017	27	72	90
		2.5%	0.17	0.70	0.034	47	72	100
		6%	0.37	1.4	0.075	90	73	110
	Toluene	1%	130	880 (869) ^{vap}	22	56,000 (869) ^{vap}	56,000	87,000 (869) ^{vap}
		2.5%	290	1,900	51	110,000 (1,920) ^{vap}	56,000	95,000 (1,920) ^{vap}
		6%	660	3,900	120	180,000 (4,360) ^{vap}	56,000	100,000 (4,360) ^{vap}
	Ethylbenzene	1%	47	83	16	5,700 (518) ^{vap}	24,000	17,000 (518) ^{vap}
		2.5%	110	190	39	13,000 (1,220) ^{vap}	24,000	22,000 (1,220) ^{vap}
		6%	260	440	91	27,000 (2,840) ^{vap}	25,000	27,000 (2,840) ^{vap}
	o-xylene	1%	60	88	28	6,600 (478) ^{sol}	41,000	17,000 (478) ^{sol}
		2.5%	140	210	67	15,000 (1,120) ^{sol}	42,000	24,000 (1,120) ^{sol}
		6%	330	480	160	33,000 (2,620) ^{sol}	43,000	33,000 (2,620) ^{sol}
	m-xylene	1%	59	82	31	6,200 (625) ^{vap}	41,000	17,000 (625) ^{vap}
		2.5%	140	190	74	14,000 (1,470) ^{vap}	42,000	24,000 (1,470) ^{vap}
		6%	320	450	170	31,000 (3,460) ^{vap}	43,000	32,000 (3,460) ^{vap}
	p-xylene	1%	56	79	29	5,900 (576) ^{sol}	41,000	17,000 (576) ^{sol}
		2.5%	130	180	69	14,000 (1,350) ^{sol}	42,000	23,000 (1,350) ^{sol}
		6%	310	430	160	30,000 (3,170) ^{sol}	43,000	31,000 (3,170) ^{sol}

NOTES

^{sol} / ^{vap} = solubility / vapour limit (potentially use if free product identified, although highly conservative).

f = oral, dermal and inhalation exposures compared to oral HCV.

All GAC are based on sandy loam soils with a pH 7.

All GAC are based on sandy loam soils with a pH 7.			LQM Generic Assessment Criteria (mg/kg) Dry weight soil					
Contaminant		SOM	Res +	Res -	Allot.	Comm.	POS _{resi}	POS _{park}
Polycyclic Aromatic Hydrocarbons (PAHs)	Acenaphthene	1%	210	3,000 (57.1) ^{sol}	34	84,000 (57.0) ^{sol}	15,000	29,000
		2.5%	510	4,700 (141) ^{sol}	85	97,000 (141) ^{sol}	15,000	30,000
		6%	1,100	6,000 (336) ^{sol}	200	100,000	15,000	30,000
	Acenaphthylene	1%	170	2,900 (86.1) ^{sol}	28	83,000 (86.1) ^{sol}	15,000	29,000
		2.5%	420	4,600 (212) ^{sol}	69	97,000 (212) ^{sol}	15,000	30,000
		6%	920	6,000 (506) ^{sol}	160	100,000	15,000	30,000
	Anthracene	1%	2,400	31,000 (1.17) ^{vap}	380	520,000	74,000	150,000
		2.5%	5,400	35,000	950	540,000	74,000	150,000
		6%	11,000	37,000	2,200	540,000	74,000	150,000
	Benz(a)anthracene	1%	7.2	11	2.9	170	29	49
		2.5%	11	14	6.5	170	29	56
		6%	13	15	13	180	29	62
	Benzo(a)pyrene (only)	1%	2.2	3.2	0.97	35	5.7	11
		2.5%	2.7	3.2	2.0	35	5.7	12
		6%	3.0	3.2	3.5	36	5.7	13
	Benzo(b)fluoranthene	1%	2.6	3.9	0.99	44	7.1	13
		2.5%	3.3	4.0	2.1	44	7.2	15
		6%	3.7	4.0	3.9	45	7.2	16
	Benzo(ghi)perylene	1%	320	360	290	3,900	640	1,400
		2.5%	340	360	470	4,000	640	1,500
		6%	350	360	640	4,000	640	1,600
	Benzo(k)fluoranthene	1%	77	110	37	1,200	190	370
		2.5%	93	110	75	1,200	190	410
		6%	100	110	130	1,200	190	440
	Chrysene	1%	15	30	4.1	350	57	93
		2.5%	22	31	9.4	350	57	110
		6%	27	32	19	350	57	120
	Dibenzo(ah)anthracene	1%	0.24	0.31	0.14	3.5	0.57	1.1
		2.5%	0.28	0.32	0.27	3.6	0.58	1.3
		6%	0.3	0.32	0.43	3.6	0.58	1.4
	Fluoranthene	1%	280	1,500	52	23,000	3,100	6,300
		2.5%	560	1,600	130	23,000	3,100	6,300
		6%	890	1,600	290	23,000	3,100	6,400
	Fluorene	1%	170	2,800 (36.0) ^{sol}	27	63,000 (30.9) ^{sol}	9,900	20,000
		2.5%	400	3,800 (76.5) ^{sol}	67	68,000	9,900	20,000
		6%	860	4,500 (183) ^{sol}	160	71,000	9,900	20,000
	Indeno(123-cd)pyrene	1%	27	45	9.5	500	82	150
		2.5%	36	46	21	510	82	170
		6%	41	46	39	510	82	180
	Naphthalene	1%	2.3 ^f	2.3 ^f	4.1 ^f	190 ^f (76.4) ^{sol}	4,900 ^f	1,200 ^f (76.4) ^{sol}
		2.5%	5.6 ^f	5.6 ^f	10 ^f	460 ^f (183) ^{sol}	4,900 ^f	1,900 ^f (183) ^{sol}
		6%	13 ^f	13 ^f	24 ^f	1,100 ^f (432) ^{sol}	4,900 ^f	3,000
	Phenanthrene	1%	95	1,300 (36.0) ^{sol}	15	22,000	3,100	6,200
		2.5%	220	1,500	38	22,000	3,100	6,200
		6%	440	1,500	90	22,000	3,100	6,300
	Pyrene	1%	620	3,700	110	54,000	7,400	15,000
		2.5%	1,200	3,800	270	54,000	7,400	15,000
		6%	2,000	3,800	620	54,000	7,400	15,000
Coal Tar (B(a)P as surrogate marker)	1%	0.79	1.2	0.32	15	2.2	4.4	
	2.5%	0.98	1.2	0.67	15	2.2	4.7	
	6%	1.1	1.2	1.2	15	2.2	4.8	

NOTES

^{sol} / ^{vap} = solubility / vapour limit (potentially use if free product identified, although highly conservative).

^f = naphthalene is based on comparison of inhalation exposure with TDI_{inhal} for localised effect.

All GAC are based on sandy loam soils with a pH 7.

LQM Generic Assessment Criteria (mg/kg) Dry weight soil

Contaminant	SOM	Res +	Res -	Allot.	Comm.	POS _{resi}	POS _{park}
Aliphatic							
EC 5-6	1%	42	42	730	3,200 (304) ^{sol}	570,000(304) ^{sol}	95,000 (304) ^{sol}
EC>6-8	1%	100	100	2,300	7,800 (144) ^{sol}	600,000	150,000 (144) ^{sol}
EC>8-10	1%	27	27	320	2,000 (78) ^{sol}	13,000	14,000 (78) ^{vap}
EC>10-12	1%	130 (48) ^{vap}	130 (48) ^{vap}	2,200	9,700 (48) ^{sol}	13,000	21,000 (48) ^{vap}
EC>12-16	1%	1,100 (24) ^{sol}	1,100 (24) ^{sol}	11,000	59,000 (24) ^{sol}	13,000	25,000 (24) ^{sol}
EC>16-35	1%	65,000 (8.48) ^{f, sol}	65,000 (8.48) ^{f, sol}	260,000 ^f	160,000 ^f	250,000 ^f	450,000 ^f
EC>35-44	1%	65,000 (8.48) ^{f, sol}	65,000 (8.48) ^{f, sol}	260,000 ^f	160,000 ^f	250,000 ^f	450,000 ^f
Aliphatic							
EC 5-6	2.5%	78	78	1,700	5,900 (558) ^{sol}	590,000	130,000 (558) ^{sol}
EC>6-8	2.5%	230	230	5,600	17,000 (322) ^{sol}	610,000	220,000 (322) ^{sol}
EC>8-10	2.5%	65	65	770	4,800 (190) ^{vap}	13,000	18,000 (190) ^{vap}
EC>10-12	2.5%	330 (118) ^{vap}	330 (118) ^{vap}	4,400	23,000 (118) ^{vap}	13,000	23,000 (118) ^{vap}
EC>12-16	2.5%	2,400 (59) ^{sol}	2,400 (59) ^{sol}	13,000	82,000 (59) ^{sol}	13,000	25,000 (59) ^{sol}
EC>16-35	2.5%	92,000 (21) ^{f, sol}	92,000 (21) ^{f, sol}	270,000 ^f	1,700,000 ^f	250,000 ^f	480,000 ^f
EC>35-44	2.5%	92,000 (21) ^{f, sol}	92,000 (21) ^{f, sol}	270,000 ^f	1,700,000 ^f	250,000 ^f	480,000 ^f
Aliphatic							
EC 5-6	6%	160	160	3,900	12,000 (1,150) ^{sol}	600,000	180,000 (1,150) ^{sol}
EC>6-8	6%	530	530	13,000	40,000 (736) ^{sol}	620,000	320,000 (736) ^{sol}
EC>8-10	6%	150	150	1,700	11,000 (451) ^{vap}	13,000	21,000 (451) ^{vap}
EC>10-12	6%	760 (283) ^{vap}	760 (283) ^{vap}	7,300	47,000 (283) ^{vap}	13,000	24,000 (283) ^{vap}
EC>12-16	6%	4,300 (142) ^{sol}	4,400 (142) ^{sol}	13,000	90,000 (142) ^{sol}	13,000	26,000 (142) ^{sol}
EC>16-35	6%	110,000 ^f	110,000 ^f	270,000 ^f	1,800,000 ^f	250,000 ^f	490,000 ^f
EC>35-44	6%	110,000 ^f	110,000 ^f	270,000 ^f	1,800,000 ^f	250,000 ^f	490,000 ^f
Aromatic							
EC5-7(benzene as non-threshold)	1%	70	370	13	26,000 (1,220) ^{sol}	56,000	76,000 (1,220) ^{sol}
EC>7-8(toluene)	1%	130	860	22	56,000 (869) ^{vap}	56,000	87,000 (869) ^{vap}
EC>8-10	1%	34	47	8.6	3,500 (613) ^{vap}	5,000	7,200 (613) ^{vap}
EC>10-12	1%	74	250	13	16,000 (364) ^{sol}	5,000	9,200 (364) ^{sol}
EC>12-16	1%	140	1,800	23	36,000 (169) ^{sol}	5,100	10,000
EC>16-21	1%	260 ^f	1,900 ^f	46 ^f	28,000 ^f	3,800 ^f	7,600 ^f
EC>21-35	1%	1,100 ^f	1,900 ^f	370 ^f	28,000 ^f	3,800 ^f	7,800 ^f
EC>35-44	1%	1,100 ^f	1,900 ^f	370 ^f	28,000 ^f	3,800 ^f	7,800 ^f
Aromatic							
EC5-7(benzene as non-threshold)	2.5%	140	690	27	46,000 (2,260) ^{sol}	56,000	84,000 (2,260) ^{sol}
EC>7-8(toluene)	2.5%	290	1,800	51	110,000 (1,920) ^{sol}	56,000	95,000 (1,920) ^{sol}
EC>8-10	2.5%	83	110	21	8,100 (1,500) ^{vap}	5,000	8,500 (1,500) ^{vap}
EC>10-12	2.5%	180	590	31	28,000 (899) ^{sol}	5,000	9,700 (899) ^{sol}
EC>12-16	2.5%	330	2,300 (419) ^{sol}	57	37,000	5,100	10,000
EC>16-21	2.5%	540 ^f	1,900 ^f	110 ^f	28,000 ^f	3,800 ^f	7,700 ^f
EC>21-35	2.5%	1,500 ^f	1,900 ^f	820 ^f	28,000 ^f	3,800 ^f	7,800 ^f
EC>35-44	2.5%	1,500 ^f	1,900 ^f	820 ^f	28,000 ^f	3,800 ^f	7,800 ^f
Aromatic							
EC5-7(benzene as non-threshold)	6%	300	1,400	57	86,000 (4,710) ^{sol}	56,000	92,000 (4,710) ^{sol}
EC>7-8(toluene)	6%	660	3,900	120	180,000 (4,360) ^{vap}	56,000	100,000 (4,360) ^{vap}
EC>8-10	6%	190	270	51	17,000 (3,580) ^{vap}	5,000	9,300 (3,580) ^{vap}
EC>10-12	6%	380	1,200	74	34,000 (2,150) ^{sol}	5,000	10,000
EC>12-16	6%	660	2,500	130	38,000	5,100	10,000
EC>16-21	6%	930 ^f	1,900 ^f	260 ^f	28,000 ^f	3,800 ^f	7,800 ^f
EC>21-35	6%	1,700 ^f	1,900 ^f	1,600 ^f	28,000 ^f	3,800 ^f	7,900 ^f
EC>35-44	6%	1,700 ^f	1,900 ^f	1,600 ^f	28,000 ^f	3,800 ^f	7,900 ^f
Aliphatic +Aromatic >EC44	1%	1,600 ^f	1,900 ^f	1,200 ^f	28,000 ^f	3,800 ^f	7,800 ^f
	2.5%	1,800 ^f	1,900 ^f	2,100 ^f	28,000 ^f	3,800 ^f	7,800 ^f
	6%	1,900 ^f	1,900 ^f	3,000 ^f	28,000 ^f	3,800 ^f	7,900 ^f

NOTES

Sol / vap = solubility / vapour limit (potentially use if free product identified, although highly conservative).

f = oral, dermal and inhalation exposures compared to oral HCV.

All GAC are based on sandy loam soils with a pH 7.

All GAC are based on sandy loam soils with a pH 7.			LQM Generic Assessment Criteria (mg/kg) Dry weight soil					
Contaminant		SOM	Res +	Res -	Allot.	Comm.	POS _{resi}	POS _{park}
Chloalkanes and Alkenes & Explosives	1,2 Dichloroethane (DCA)	1%	7.1E-03	9.2E-03	4.6E-03	0.67	29	21
		2.5%	1.1E-02	1.3E-02	8.3E-03	0.97	29	24
		6%	1.9E-02	2.3E-02	1.6E-02	1.7	29	28
	1,1,1 Trichloroethane (TCA)	1%	8.8	9.0	48	660	140,000	57,000 (1,425) ^{vap}
		2.5%	18	18	110	1,300	140,000	76,000 (2,915) ^{vap}
		6%	39	40	240	3,000	140,000	100,000 (6,392) ^{vap}
	1,1,2,2-Tetrachloroethanes (PCA)	1%	1.6	3.9	0.41	270	1,400	1,800
		2.5%	3.4	8.0	0.89	550	1,400	2,100
		6%	7.5	17	2.0	1,100	1,400	2,300
	1,1,1,2-Tetrachloroethanes (PCA)	1%	1.2	1.5	0.79	110	1,400	1,500
		2.5%	2.8	3.5	1.9	250	1,400	1,800
		6%	6.4	8.2	4.4	560	1,400	2,100
	Tetrachloroethene (PCE)	1%	0.18	0.18	0.65	19	1,400	810 (424) ^{sol}
		2.5%	0.39	0.40	1.5	42	1,400	1,100 (951) ^{sol}
		6%	0.90	0.92	3.6	95	1,400	1,500
	Tetrachloromethane (carbon tetrachloride)	1%	2.6E-02	2.6E-02	0.45	2.9	890	190
		2.5%	5.6E-02	5.6E-02	1.0	6.3	920	270
		6%	0.13	0.13	2.4	14	950	400
	Trichloroethene (TCE)	1%	1.6E-02	1.7E-02	4.1E-02	1.2	120	70
		2.5%	3.4E-02	3.6E-02	9.1E-02	2.6	120	91
		6%	7.5E-02	8.0E-02	0.21	5.7	120	120
	Trichloromethane (chloroform)	1%	0.91	1.2	0.42	99	2,500	2,600
		2.5%	1.7	2.1	0.83	170	2,500	2,800
		6%	3.4	4.2	1.7	350	2,500	3,100
	Chloroethene (vinyl chloride)	1%	6.4E-04	7.7E-04	5.5E-04	5.9E-02	3.5	4.8
		2.5%	8.7E-04	1.0E-03	1.0E-03	7.7E-02	3.5	5.0
		6%	1.4E-03	1.5E-03	1.8E-03	0.12	3.5	5.4
	2,4,6-Trinitritoluene (TNT)	1%	1.6	65	0.24	1,000	130	260
		2.5%	3.7	66	0.58	1,000	130	270
		6%	8.1	66	1.4	1,000	130	270
	RDX	1%	120	13,000	17	210,000	26,000	49,000 (18.7) ^{sol}
		2.5%	250	13,000	38	210,000	26,000	51,000
		6%	540	13,000	85	210,000	27,000	53,000
	HMX	1%	5.7	6,700	0.86	110,000	13,000	23,000 (0.35) ^{vap}
		2.5%	13	6,700	1.9	110,000	13,000	23,000 (0.39) ^{vap}
		6%	26	6,700	3.9	110,000	13,000	24,000 (0.48) ^{vap}
Pesticides	Aldrin	1%	5.7	7.3	3.2	170	18	30
		2.5%	6.6	7.4	6.1	170	18	31
		6%	7.1	7.5	9.8	170	18	31
	Dieldrin	1%	0.97	7.0	0.17	170	18	30
		2.5%	2.0	7.3	0.41	170	18	30
		6%	3.5	7.4	0.96	170	18	31
	Atrazine	1%	3.3	610	0.5	9,300	1,200	2,300
		2.5%	7.8	620	1.2	9,400	1,200	2,400
		6%	17.4	620	2.7	9,400	1,200	2,400
	Dichlorvos	1%	3.2E-02	6.4	4.9E-03	140	16	26
		2.5%	6.6E-02	6.5	1.0E-02	140	16	26
		6%	0.14	6.6	2.2E-02	140	16	27
	Endosulfanns (2 isomers)	1%	7.4	160 (3.0E-03) ^{vap}	1.2	5,600 (3.0E-03) ^{vap}	1,200	2,300
		2.5%	18	280 (7.0E-03) ^{vap}	2.9	7,400 (7.0E-03) ^{vap}	1,200	2,400
		6%	41	410 (1.6E-02) ^{vap}	6.8	8,400 (1.6E-02) ^{vap}	1,200	2,500
	Hexachlorocyclohexane (3 isomers), inc Lindane	1%	8.5E-02	3.7	1.3E-02	65	8.1	15
		2.5%	0.2	3.8	3.2E-02	65	8.1	15
		6%	0.46	3.8	7.7E-02	65	8.1	16

NOTES

Sol / vap = solubility / vapour limit (potentially use if free product identified, although highly conservative).

All GAC are based on
sandy loam soils with a pH
7.

LQM Generic Assessment Criteria (mg/kg) Dry weight soil

Contaminant		SOM	Res +	Res -	Allot.	Comm.	POS _{resi}	POS _{park}
Chlorobenzenes	Chlorobenzene	1%	0.46	0.46	5.9	56	11,000	1,300 (675) ^{sol}
		2.5%	1.0	1.0	14	130	13,000	2,000 (1,520) ^{sol}
		6%	2.4	2.4	32	290	14,000	2,900
	Dichlorobenzenes (3 isomers)	1%	23	24	94	2,000 (571) ^{sol}	90,000	24,000 (571) ^{sol}
		2.5%	55	57	230	4,800 (1,370) ^{sol}	95,000	36,000 (1,370) ^{sol}
		6%	130	130	540	11,000 (3,240) ^{sol}	98,000	51,000 (3,270) ^{sol}
	Trichlorobenzenes (3 isomers)	1%	2.6	2.6	55	220	15,000	1,700 (318) ^{vap}
		2.5%	6.4	6.4	140	530	17,000	2,600 (786) ^{vap}
		6%	15	15	320	1,300	19,000	4,000 (1,880) ^{vap}
	Tetrachlorobenzenes (3 isomers)	1%	0.66	0.75	0.38	49 (39.4) ^{vap}	78	110 (39) ^{vap}
		2.5%	1.6	1.9	0.90	120 (98.1) ^{vap}	79	120
		6%	3.7	4.3	2.2	240 (235) ^{vap}	79	130
	Pentachlorobenzene	1%	5.8	19	1.2	640 (43.0) ^{sol}	100	190
		2.5%	12	30	3.1	770 (107) ^{sol}	100	190
		6%	22	38	7.0	830	100	190
	Hexachlorobenzene	1%	1.8 (0.20) ^{vap}	4.1 (0.20) ^{vap}	0.47	110 (0.20) ^{vap}	16	30
		2.5%	3.3 (0.50) ^{vap}	5.7 (0.50) ^{vap}	1.1	120	16	30
		6%	4.9	6.7 (1.2) ^{vap}	2.5	120	16	30
Chlorophenol	Chlorophenols (4 congeners)	1%	0.87 ^g	94	0.13 ^g	3,500	620	1,100
		2.5%	2.0	150	0.30	4,000	620	1,100
		6%	4.5	210	0.70	4,300	620	1,100
	Pentachlorophenol	1%	0.22	27 (16.4) ^{vap}	3.0E-02	400	60	110
		2.5%	0.52	29	8.0E-02	400	60	120
		6%	1.2	31	0.19	400	60	120
Others	Carbon Disulphide	1%	0.14	0.14	4.8	11	11,000	1,300
		2.5%	0.29	0.29	10	22	11,000	1,900
		6%	0.62	0.62	23	47	11,000	2,700
	Hexachlorobutadiene	1%	0.29	0.32	0.25	31	25	48
		2.5%	0.7	0.78	0.61	66	25	50
		6%	1.6	1.8	1.4	120	25	51
	Phenol	1%	280	750	66	760 ^{dir} (31,000)	760 ^{dir} (11,000)	760 ^{dir} (8,600)
		2.5%	550	1,300	140	1,500 ^{dir} (35,000)	1,500 ^{dir} (11,000)	1,500 ^{dir} (9,700)
		6%	1,100	2,300	280	3,200 ^{dir} (37,000)	3,200 ^{dir} (11,000)	3,200 ^{dir} (11,000)

NOTES

^{Sol / vap} = solubility / vapour limit (potentially use if free product identified, although highly conservative).

^{dir} = S4uls based on threshold protective of direct skin contact with phenol (brackets long term exposure for illustration purposes).

^g = derived based on 2,3,4,6-tetrachlorophenol.

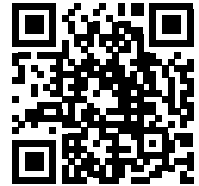
Appendix G

HazWasteOnline Output Sheets

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

- understand the origin of the waste
- select the correct List of Waste code(s)
- confirm that the list of determinands, results and sampling plan are fit for purpose
- select and justify the chosen metal species (Appendix B)
- correctly apply moisture correction and other available corrections
- add the meta data for their user-defined substances (Appendix A)
- check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)



TLDXG-9AN31-VNDUR

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in **pale yellow**.

Job name

LKC 22 1332

Description/Comments

Project

LKC 22 1332

Site

Alder Hey

Classified by

Name: **Colin Crompton**
Date: **22 Aug 2022 08:26 GMT**
Telephone: **0161 763 7200**

Company: **LK Group**
Unit 29, Eton Business Park
Eton Hill Rd, Radcliffe
Greater Manchester
M26 2ZS

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification:

CERTIFIED

Course

Hazardous Waste Classification

Date

08 Oct 2020

Next 3 year Refresher due by Oct 2023

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	B8-26/07/2022-0.5	0.5-0.9	Non Hazardous		2
2	B6-26/07/2022-0.0	0.0-1.0	Non Hazardous		4
3	ST1M-04/08/2022-0	0-0.7	Non Hazardous		6
4	ST2S-03/08/2022-0	0-0.5	Non Hazardous		8
5	ST2N-03/08/2022-0	0-0.7	Non Hazardous		11
6	ST3M-04/08/2022-0.5	0.5-1.3	Non Hazardous		13
7	ST3S-03/08/2022-0	0-1	Non Hazardous		16
8	B3-01/08/2022-0	0-0.8	Non Hazardous		19
9	B5-28/07/2022-0.00	0.00-1.40	Non Hazardous		21
10	B1-28/07/2022-0.00	0.00-0.40	Non Hazardous		23
11	W1-26/07/2022-0.0	0.0-0.5	Non Hazardous		25
12	W5-26/07/2022-0.0	0.0-0.4	Non Hazardous		27

Related documents

#	Name	Description
1	HWOL_22-28635-20220804 153554.hwol	Eurofins Chemtest .hwol file used to populate the Job
2	HWOL_22-30111-20220815 170547.hwol	Eurofins Chemtest .hwol file used to populate the Job
3	HWOL_22-28952-20220815 183344.hwol	Eurofins Chemtest .hwol file used to populate the Job
4	HWOL_22-28638-20220804 153651.hwol	Eurofins Chemtest .hwol file used to populate the Job
5	LK SUITE 1 - 5	waste stream template used to create this Job

Report

Created by: Colin Crompton

Created date: 22 Aug 2022 08:26 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	29
Appendix B: Rationale for selection of metal species	30
Appendix C: Version	31

Classification of sample: B8-26/07/2022-0.5

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
B8-26/07/2022-0.5	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.5-0.9 m	
Moisture content:	
13%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				5.1	mg/kg	1.32	5.858	mg/kg	0.000586 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium oxide }				0.15	mg/kg	1.142	0.149	mg/kg	0.0000149 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				19	mg/kg	1.462	24.16	mg/kg	0.00242 %	✓	
		215-160-9	1308-38-9									
4	copper { dicopper oxide; copper (I) oxide }				27	mg/kg	1.126	26.447	mg/kg	0.00264 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
5	mercury { mercury dichloride }				0.08	mg/kg	1.353	0.0942	mg/kg	0.00000942 %	✓	
	080-010-00-X	231-299-8	7487-94-7									
6	nickel { nickel(II) oxide (nickel monoxide) }				13	mg/kg	1.273	14.393	mg/kg	0.00144 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	140	mg/kg		121.8	mg/kg	0.0122 %	✓	
	082-001-00-6											
8	selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				<0.25	mg/kg	1.405	<0.351	mg/kg	<0.0000351 %		<LOD
	034-002-00-8											
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				14	mg/kg	1.785	21.744	mg/kg	0.00217 %	✓	
	023-001-00-8	215-239-8	1314-62-1									
10	zinc { zinc oxide }				140	mg/kg	1.245	151.606	mg/kg	0.0152 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
12	pH				9.1	pH		9.1	pH	9.1 pH		
13	naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
14	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	• acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	• fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	• phenanthrene	201-581-5	85-01-8		1.8 mg/kg		1.566 mg/kg	0.000157 %	✓	
18	• anthracene	204-371-1	120-12-7		0.38 mg/kg		0.331 mg/kg	0.0000331 %	✓	
19	• fluoranthene	205-912-4	206-44-0		2 mg/kg		1.74 mg/kg	0.000174 %	✓	
20	• pyrene	204-927-3	129-00-0		1.9 mg/kg		1.653 mg/kg	0.000165 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6		0.72 mg/kg		0.626 mg/kg	0.0000626 %	✓	
22	chrysene	601-048-00-0	205-923-4		0.82 mg/kg		0.713 mg/kg	0.0000713 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	• indeno[123-cd]pyrene	205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	• benzo[ghi]perylene	205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
Total:								0.0375 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- ND Not detected
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: B6-26/07/2022-0.0

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
B6-26/07/2022-0.0	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.0-1.0 m	
Moisture content:	
11%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 11% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				3.1 mg/kg	1.32	3.643 mg/kg	0.000364 %	✓		
	033-003-00-0	215-481-4	1327-53-3								
2	cadmium { cadmium oxide }				<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %			<LOD
	048-002-00-0	215-146-2	1306-19-0								
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				7.1 mg/kg	1.462	9.236 mg/kg	0.000924 %	✓		
		215-160-9	1308-38-9								
4	copper { dicopper oxide; copper (I) oxide }				12 mg/kg	1.126	12.024 mg/kg	0.0012 %	✓		
	029-002-00-X	215-270-7	1317-39-1								
5	mercury { mercury dichloride }				<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
6	nickel { nickel(II) oxide (nickel monoxide) }				6.9 mg/kg	1.273	7.815 mg/kg	0.000781 %	✓		
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]								
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	64 mg/kg		56.96 mg/kg	0.0057 %	✓		
	082-001-00-6										
8	selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				<0.25 mg/kg	1.405	<0.351 mg/kg	<0.0000351 %			<LOD
	034-002-00-8										
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				9.2 mg/kg	1.785	14.617 mg/kg	0.00146 %	✓		
	023-001-00-8	215-239-8	1314-62-1								
10	zinc { zinc oxide }				71 mg/kg	1.245	78.653 mg/kg	0.00787 %	✓		
	030-013-00-7	215-222-5	1314-13-2								
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %			<LOD
	024-001-00-0	215-607-8	1333-82-0								
12	pH				9.4 pH		9.4 pH	9.4 pH			
			PH								
13	naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-052-00-2	202-049-5	91-20-3								
14	acenaphthylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		205-917-1	208-96-8								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	• acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	• fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	• phenanthrene	201-581-5	85-01-8		0.76 mg/kg		0.676 mg/kg	0.0000676 %	✓	
18	• anthracene	204-371-1	120-12-7		0.17 mg/kg		0.151 mg/kg	0.0000151 %	✓	
19	• fluoranthene	205-912-4	206-44-0		0.99 mg/kg		0.881 mg/kg	0.0000881 %	✓	
20	• pyrene	204-927-3	129-00-0		0.96 mg/kg		0.854 mg/kg	0.0000854 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6		0.52 mg/kg		0.463 mg/kg	0.0000463 %	✓	
22	chrysene	601-048-00-0	205-923-4		0.44 mg/kg		0.392 mg/kg	0.0000392 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	• indeno[123-cd]pyrene	205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	• benzo[ghi]perylene	205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
Total:								0.0189 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- ND Not detected
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: ST1M-04/08/2022-0

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
ST1M-04/08/2022-0	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0-0.7 m	
Moisture content:	
10%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 10% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic trioxide }				5.6 mg/kg	1.32	6.654 mg/kg	0.000665 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
2	cadmium { cadmium oxide }				0.12 mg/kg	1.142	0.123 mg/kg	0.0000123 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				10 mg/kg	1.462	13.154 mg/kg	0.00132 %	✓	
		215-160-9	1308-38-9							
4	copper { dicopper oxide; copper (I) oxide }				13 mg/kg	1.126	13.173 mg/kg	0.00132 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
5	mercury { mercury dichloride }				0.07 mg/kg	1.353	0.0853 mg/kg	0.00000853 %	✓	
	080-010-00-X	231-299-8	7487-94-7							
6	nickel { nickel(II) oxide (nickel monoxide) }				11 mg/kg	1.273	12.599 mg/kg	0.00126 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	140 mg/kg		126 mg/kg	0.0126 %	✓	
	082-001-00-6									
8	selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				0.34 mg/kg	1.405	0.43 mg/kg	0.000043 %	✓	
	034-002-00-8									
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				16 mg/kg	1.785	25.707 mg/kg	0.00257 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
10	zinc { zinc oxide }				170 mg/kg	1.245	190.441 mg/kg	0.019 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
12	pH				9.4 pH		9.4 pH	9.4 pH		
13	naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
14	acenaphthylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	phenanthrene	201-581-5	85-01-8		3 mg/kg		2.7 mg/kg	0.00027 %	✓	
18	anthracene	204-371-1	120-12-7		0.62 mg/kg		0.558 mg/kg	0.0000558 %	✓	
19	fluoranthene	205-912-4	206-44-0		4.2 mg/kg		3.78 mg/kg	0.000378 %	✓	
20	pyrene	204-927-3	129-00-0		4 mg/kg		3.6 mg/kg	0.00036 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6		1.8 mg/kg		1.62 mg/kg	0.000162 %	✓	
22	chrysene	601-048-00-0	205-923-4		1.9 mg/kg		1.71 mg/kg	0.000171 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		2.2 mg/kg		1.98 mg/kg	0.000198 %	✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.82 mg/kg		0.738 mg/kg	0.0000738 %	✓	
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		1.9 mg/kg		1.71 mg/kg	0.000171 %	✓	
26	indeno[123-cd]pyrene	205-893-2	193-39-5		1.3 mg/kg		1.17 mg/kg	0.000117 %	✓	
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.29 mg/kg		0.261 mg/kg	0.0000261 %	✓	
28	benzo[ghi]perylene	205-883-8	191-24-2		1.4 mg/kg		1.26 mg/kg	0.000126 %	✓	
Total:								0.0411 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- ND Not detected
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: ST2S-03/08/2022-0

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
ST2S-03/08/2022-0	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0-0.5 m	
Moisture content:	
16%	
(wet weight correction)	

Hazard properties

None identified

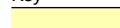
Determinands

Moisture content: 16% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic trioxide }				4.9 mg/kg	1.32	5.434 mg/kg	0.000543 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
2	cadmium { cadmium oxide }				0.36 mg/kg	1.142	0.345 mg/kg	0.0000345 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				14 mg/kg	1.462	17.188 mg/kg	0.00172 %	✓	
		215-160-9	1308-38-9							
4	copper { dicopper oxide; copper (I) oxide }				12 mg/kg	1.126	11.349 mg/kg	0.00113 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
5	mercury { mercury dichloride }				0.05 mg/kg	1.353	0.0568 mg/kg	0.00000568 %	✓	
	080-010-00-X	231-299-8	7487-94-7							
6	nickel { nickel(II) oxide (nickel monoxide) }				9.7 mg/kg	1.273	10.369 mg/kg	0.00104 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	120 mg/kg		100.8 mg/kg	0.0101 %	✓	
	082-001-00-6									
8	selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				0.4 mg/kg	1.405	0.472 mg/kg	0.0000472 %	✓	
	034-002-00-8									
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				14 mg/kg	1.785	20.994 mg/kg	0.0021 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
10	zinc { zinc oxide }				120 mg/kg	1.245	125.467 mg/kg	0.0125 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
12	boron { diboron trioxide; boric oxide }				2.1 mg/kg	3.22	5.68 mg/kg	0.000568 %	✓	
	005-008-00-8	215-125-8	1303-86-2							
13	TPH (C6 to C40) petroleum group				<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
			TPH							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	benzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
	006-007-00-5									
20	pH		PH		9.6 pH		9.6 pH	9.6 pH		
21	naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
22	acenaphthylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8							
23	acenaphthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		201-469-6	83-32-9							
24	fluorene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		201-695-5	86-73-7							
25	phenanthrene				4.4 mg/kg		3.696 mg/kg	0.00037 %	✓	
		201-581-5	85-01-8							
26	anthracene				0.97 mg/kg		0.815 mg/kg	0.0000815 %	✓	
		204-371-1	120-12-7							
27	fluoranthene				5.2 mg/kg		4.368 mg/kg	0.000437 %	✓	
		205-912-4	206-44-0							
28	pyrene				4.6 mg/kg		3.864 mg/kg	0.000386 %	✓	
		204-927-3	129-00-0							
29	benzo[a]anthracene				2.1 mg/kg		1.764 mg/kg	0.000176 %	✓	
	601-033-00-9	200-280-6	56-55-3							
30	chrysene				2.2 mg/kg		1.848 mg/kg	0.000185 %	✓	
	601-048-00-0	205-923-4	218-01-9							
31	benzo[b]fluoranthene				2.4 mg/kg		2.016 mg/kg	0.000202 %	✓	
	601-034-00-4	205-911-9	205-99-2							
32	benzo[k]fluoranthene				0.82 mg/kg		0.689 mg/kg	0.0000689 %	✓	
	601-036-00-5	205-916-6	207-08-9							
33	benzo[a]pyrene; benzo[def]chrysene				2.3 mg/kg		1.932 mg/kg	0.000193 %	✓	
	601-032-00-3	200-028-5	50-32-8							
34	indeno[123-cd]pyrene				1.3 mg/kg		1.092 mg/kg	0.000109 %	✓	
		205-893-2	193-39-5							
35	dibenz[a,h]anthracene				0.22 mg/kg		0.185 mg/kg	0.0000185 %	✓	
	601-041-00-2	200-181-8	53-70-3							
36	benzo[ghi]perylene				1.3 mg/kg		1.092 mg/kg	0.000109 %	✓	
		205-883-8	191-24-2							
37	monohydric phenols		P1186		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
Total:								0.0334 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: ST2N-03/08/2022-0

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
ST2N-03/08/2022-0	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0-0.7 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
12%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				5.2	mg/kg	1.32	6.042	mg/kg	0.000604 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium oxide }				0.16	mg/kg	1.142	0.161	mg/kg	0.0000161 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				13	mg/kg	1.462	16.72	mg/kg	0.00167 %	✓	
		215-160-9	1308-38-9									
4	copper { dicopper oxide; copper (I) oxide }				16	mg/kg	1.126	15.853	mg/kg	0.00159 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
5	mercury { mercury dichloride }				0.06	mg/kg	1.353	0.0715	mg/kg	0.00000715 %	✓	
	080-010-00-X	231-299-8	7487-94-7									
6	nickel { nickel(II) oxide (nickel monoxide) }				11	mg/kg	1.273	12.319	mg/kg	0.00123 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	130	mg/kg		114.4	mg/kg	0.0114 %	✓	
	082-001-00-6											
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.34	mg/kg	1.405	0.42	mg/kg	0.000042 %	✓	
	034-002-00-8											
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				15	mg/kg	1.785	23.564	mg/kg	0.00236 %	✓	
	023-001-00-8	215-239-8	1314-62-1									
10	zinc { zinc oxide }				180	mg/kg	1.245	197.163	mg/kg	0.0197 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
12	pH		PH		9.7	pH		9.7	pH	9.7 pH		
13	naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
14	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	• acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	• fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	• phenanthrene	201-581-5	85-01-8		6.5 mg/kg		5.72 mg/kg	0.000572 %	✓	
18	• anthracene	204-371-1	120-12-7		1.3 mg/kg		1.144 mg/kg	0.000114 %	✓	
19	• fluoranthene	205-912-4	206-44-0		6.6 mg/kg		5.808 mg/kg	0.000581 %	✓	
20	• pyrene	204-927-3	129-00-0		5.9 mg/kg		5.192 mg/kg	0.000519 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	2.4 mg/kg		2.112 mg/kg	0.000211 %	✓	
22	chrysene	601-048-00-0	205-923-4	218-01-9	2.7 mg/kg		2.376 mg/kg	0.000238 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	3.2 mg/kg		2.816 mg/kg	0.000282 %	✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	1.1 mg/kg		0.968 mg/kg	0.0000968 %	✓	
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	2.7 mg/kg		2.376 mg/kg	0.000238 %	✓	
26	• indeno[123-cd]pyrene	205-893-2	193-39-5		1.6 mg/kg		1.408 mg/kg	0.000141 %	✓	
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	0.29 mg/kg		0.255 mg/kg	0.0000255 %	✓	
28	• benzo[ghi]perylene	205-883-8	191-24-2		1.7 mg/kg		1.496 mg/kg	0.00015 %	✓	
Total:								0.042 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: ST3M-04/08/2022-0.5

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
ST3M-04/08/2022-0.5	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.5-1.3 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
17%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				5.8	mg/kg	1.32	6.356	mg/kg	0.000636 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium oxide }				<0.1	mg/kg	1.142	<0.114	mg/kg	<0.0000114 %		<LOD
	048-002-00-0	215-146-2	1306-19-0									
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				18	mg/kg	1.462	21.836	mg/kg	0.00218 %	✓	
		215-160-9	1308-38-9									
4	copper { dicopper oxide; copper (I) oxide }				19	mg/kg	1.126	17.755	mg/kg	0.00178 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
5	mercury { mercury dichloride }				<0.05	mg/kg	1.353	<0.0677	mg/kg	<0.00000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
6	nickel { nickel(II) oxide (nickel monoxide) }				21	mg/kg	1.273	22.181	mg/kg	0.00222 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	33	mg/kg		27.39	mg/kg	0.00274 %	✓	
	082-001-00-6											
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.36	mg/kg	1.405	0.42	mg/kg	0.000042 %	✓	
	034-002-00-8											
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				18	mg/kg	1.785	26.671	mg/kg	0.00267 %	✓	
	023-001-00-8	215-239-8	1314-62-1									
10	zinc { zinc oxide }				54	mg/kg	1.245	55.788	mg/kg	0.00558 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
12	boron { diboron trioxide; boric oxide }				0.65	mg/kg	3.22	1.737	mg/kg	0.000174 %	✓	
	005-008-00-8	215-125-8	1303-86-2									
13	TPH (C6 to C40) petroleum group		TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	benzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
	006-007-00-5									
20	pH				8.5 pH		8.5 pH	8.5 pH		
			P _H							
21	naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
22	acenaphthylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8							
23	acenaphthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		201-469-6	83-32-9							
24	fluorene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		201-695-5	86-73-7							
25	phenanthrene				0.91 mg/kg		0.755 mg/kg	0.0000755 %	✓	
		201-581-5	85-01-8							
26	anthracene				0.16 mg/kg		0.133 mg/kg	0.0000133 %	✓	
		204-371-1	120-12-7							
27	fluoranthene				0.93 mg/kg		0.772 mg/kg	0.0000772 %	✓	
		205-912-4	206-44-0							
28	pyrene				0.91 mg/kg		0.755 mg/kg	0.0000755 %	✓	
		204-927-3	129-00-0							
29	benzo[a]anthracene				0.38 mg/kg		0.315 mg/kg	0.0000315 %	✓	
	601-033-00-9	200-280-6	56-55-3							
30	chrysene				0.33 mg/kg		0.274 mg/kg	0.0000274 %	✓	
	601-048-00-0	205-923-4	218-01-9							
31	benzo[b]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
32	benzo[k]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
33	benzo[a]pyrene; benzo[def]chrysene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
34	indeno[123-cd]pyrene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-893-2	193-39-5							
35	dibenz[a,h]anthracene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
36	benzo[ghi]perylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-883-8	191-24-2							
37	monohydric phenols				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
			P1186							
Total:								0.0196 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1 Only the metal concentration has been used for classification	

Classification of sample: ST3S-03/08/2022-0

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
ST3S-03/08/2022-0	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0-1 m	
Moisture content:	
11%	
(wet weight correction)	

Hazard properties

None identified

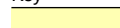
Determinands

Moisture content: 11% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic trioxide }				5.5 mg/kg	1.32	6.463 mg/kg	0.000646 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
2	cadmium { cadmium oxide }				0.16 mg/kg	1.142	0.163 mg/kg	0.0000163 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				14 mg/kg	1.462	18.211 mg/kg	0.00182 %	✓	
		215-160-9	1308-38-9							
4	copper { dicopper oxide; copper (I) oxide }				14 mg/kg	1.126	14.029 mg/kg	0.0014 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
5	mercury { mercury dichloride }				0.46 mg/kg	1.353	0.554 mg/kg	0.0000554 %	✓	
	080-010-00-X	231-299-8	7487-94-7							
6	nickel { nickel(II) oxide (nickel monoxide) }				13 mg/kg	1.273	14.724 mg/kg	0.00147 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	150 mg/kg		133.5 mg/kg	0.0134 %	✓	
	082-001-00-6									
8	selenium { selenium compounds with the exception of cadmium selenide and those specified elsewhere in this Annex }				0.51 mg/kg	1.405	0.638 mg/kg	0.0000638 %	✓	
	034-002-00-8									
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				16 mg/kg	1.785	25.421 mg/kg	0.00254 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
10	zinc { zinc oxide }				200 mg/kg	1.245	221.559 mg/kg	0.0222 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
12	boron { diboron trioxide; boric oxide }				2.3 mg/kg	3.22	6.591 mg/kg	0.000659 %	✓	
	005-008-00-8	215-125-8	1303-86-2							
13	TPH (C6 to C40) petroleum group		TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	benzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
17	ethylbenzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
	006-007-00-5									
20	pH		PH		9.6 pH		9.6 pH	9.6 pH		
21	naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
22	acenaphthylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8							
23	acenaphthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		201-469-6	83-32-9							
24	fluorene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		201-695-5	86-73-7							
25	phenanthrene				4.3 mg/kg		3.827 mg/kg	0.000383 %	✓	
		201-581-5	85-01-8							
26	anthracene				0.81 mg/kg		0.721 mg/kg	0.0000721 %	✓	
		204-371-1	120-12-7							
27	fluoranthene				5 mg/kg		4.45 mg/kg	0.000445 %	✓	
		205-912-4	206-44-0							
28	pyrene				4.3 mg/kg		3.827 mg/kg	0.000383 %	✓	
		204-927-3	129-00-0							
29	benzo[a]anthracene				1.8 mg/kg		1.602 mg/kg	0.00016 %	✓	
	601-033-00-9	200-280-6	56-55-3							
30	chrysene				2 mg/kg		1.78 mg/kg	0.000178 %	✓	
	601-048-00-0	205-923-4	218-01-9							
31	benzo[b]fluoranthene				2.4 mg/kg		2.136 mg/kg	0.000214 %	✓	
	601-034-00-4	205-911-9	205-99-2							
32	benzo[k]fluoranthene				0.86 mg/kg		0.765 mg/kg	0.0000765 %	✓	
	601-036-00-5	205-916-6	207-08-9							
33	benzo[a]pyrene; benzo[def]chrysene				1.9 mg/kg		1.691 mg/kg	0.000169 %	✓	
	601-032-00-3	200-028-5	50-32-8							
34	indeno[123-cd]pyrene				1.3 mg/kg		1.157 mg/kg	0.000116 %	✓	
		205-893-2	193-39-5							
35	dibenz[a,h]anthracene				0.22 mg/kg		0.196 mg/kg	0.0000196 %	✓	
	601-041-00-2	200-181-8	53-70-3							
36	benzo[ghi]perylene				1.1 mg/kg		0.979 mg/kg	0.0000979 %	✓	
		205-883-8	191-24-2							
37	monohydric phenols		P1186		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
Total:								0.0477 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: B3-01/08/2022-0

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
B3-01/08/2022-0	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0-0.8 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
8.2%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 8.2% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				11	mg/kg	1.32	13.333	mg/kg	0.00133 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium oxide }				2.2	mg/kg	1.142	2.307	mg/kg	0.000231 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				17	mg/kg	1.462	22.809	mg/kg	0.00228 %	✓	
		215-160-9	1308-38-9									
4	copper { dicopper oxide; copper (I) oxide }				470	mg/kg	1.126	485.776	mg/kg	0.0486 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
5	mercury { mercury dichloride }				0.11	mg/kg	1.353	0.137	mg/kg	0.0000137 %	✓	
	080-010-00-X	231-299-8	7487-94-7									
6	nickel { nickel(II) oxide (nickel monoxide) }				18	mg/kg	1.273	21.028	mg/kg	0.0021 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	480	mg/kg		440.64	mg/kg	0.0441 %	✓	
	082-001-00-6											
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.58	mg/kg	1.405	0.748	mg/kg	0.0000748 %	✓	
	034-002-00-8											
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				15	mg/kg	1.785	24.582	mg/kg	0.00246 %	✓	
	023-001-00-8	215-239-8	1314-62-1									
10	zinc { zinc oxide }				560	mg/kg	1.245	639.883	mg/kg	0.064 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
12	pH		PH		8.5	pH		8.5	pH	8.5 pH		
13	naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
14	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
15	acenaphthene 201-469-6 83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD	
16	fluorene 201-695-5 86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD	
17	phenanthrene 201-581-5 85-01-8		2.7	mg/kg		2.479	mg/kg	0.000248 %	✓		
18	anthracene 204-371-1 120-12-7		0.73	mg/kg		0.67	mg/kg	0.000067 %	✓		
19	fluoranthene 205-912-4 206-44-0		4.2	mg/kg		3.856	mg/kg	0.000386 %	✓		
20	pyrene 204-927-3 129-00-0		4.4	mg/kg		4.039	mg/kg	0.000404 %	✓		
21	benzo[a]anthracene 601-033-00-9 200-280-6 56-55-3		3.2	mg/kg		2.938	mg/kg	0.000294 %	✓		
22	chrysene 601-048-00-0 205-923-4 218-01-9		3.8	mg/kg		3.488	mg/kg	0.000349 %	✓		
23	benzo[b]fluoranthene 601-034-00-4 205-911-9 205-99-2		6.1	mg/kg		5.6	mg/kg	0.00056 %	✓		
24	benzo[k]fluoranthene 601-036-00-5 205-916-6 207-08-9		2	mg/kg		1.836	mg/kg	0.000184 %	✓		
25	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 200-028-5 50-32-8		5.3	mg/kg		4.865	mg/kg	0.000487 %	✓		
26	indeno[123-cd]pyrene 205-893-2 193-39-5		3.6	mg/kg		3.305	mg/kg	0.00033 %	✓		
27	dibenz[a,h]anthracene 601-041-00-2 200-181-8 53-70-3		0.59	mg/kg		0.542	mg/kg	0.0000542 %	✓		
28	benzo[ghi]perylene 205-883-8 191-24-2		3.7	mg/kg		3.397	mg/kg	0.00034 %	✓		
Total:									0.169 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: B5-28/07/2022-0.00

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
B5-28/07/2022-0.00	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.00-1.40 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
15%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic trioxide }				4.4 mg/kg	1.32	4.938 mg/kg	0.000494 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
2	cadmium { cadmium oxide }				<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<LOD
	048-002-00-0	215-146-2	1306-19-0							
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				16 mg/kg	1.462	19.877 mg/kg	0.00199 %	✓	
		215-160-9	1308-38-9							
4	copper { dicopper oxide; copper (I) oxide }				11 mg/kg	1.126	10.527 mg/kg	0.00105 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
5	mercury { mercury dichloride }				<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
6	nickel { nickel(II) oxide (nickel monoxide) }				15 mg/kg	1.273	16.226 mg/kg	0.00162 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	33 mg/kg		28.05 mg/kg	0.00281 %	✓	
	082-001-00-6									
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.34 mg/kg	1.405	0.406 mg/kg	0.0000406 %	✓	
	034-002-00-8									
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				15 mg/kg	1.785	22.761 mg/kg	0.00228 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
10	zinc { zinc oxide }				42 mg/kg	1.245	44.436 mg/kg	0.00444 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
12	pH		PH		9 pH		9 pH	9pH		
13	naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
14	acenaphthylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	• acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	• fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	• phenanthrene	201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
18	• anthracene	204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
19	• fluoranthene	205-912-4	206-44-0		0.71 mg/kg		0.603 mg/kg	0.0000603 %	✓	
20	• pyrene	204-927-3	129-00-0		0.65 mg/kg		0.553 mg/kg	0.0000553 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
22	chrysene	601-048-00-0	205-923-4	218-01-9	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	• indeno[123-cd]pyrene	205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	• benzo[ghi]perylene	205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
Total:								0.0151 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: B1-28/07/2022-0.00

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
B1-28/07/2022-0.00	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.00-0.40 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
11%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 11% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				6.6	mg/kg	1.32	7.756	mg/kg	0.000776 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium oxide }				0.18	mg/kg	1.142	0.183	mg/kg	0.0000183 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				17	mg/kg	1.462	22.113	mg/kg	0.00221 %	✓	
		215-160-9	1308-38-9									
4	copper { dicopper oxide; copper (I) oxide }				14	mg/kg	1.126	14.029	mg/kg	0.0014 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
5	mercury { mercury dichloride }				0.05	mg/kg	1.353	0.0602	mg/kg	0.00000602 %	✓	
	080-010-00-X	231-299-8	7487-94-7									
6	nickel { nickel(II) oxide (nickel monoxide) }				15	mg/kg	1.273	16.989	mg/kg	0.0017 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	35	mg/kg		31.15	mg/kg	0.00311 %	✓	
	082-001-00-6											
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.43	mg/kg	1.405	0.538	mg/kg	0.0000538 %	✓	
	034-002-00-8											
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				18	mg/kg	1.785	28.599	mg/kg	0.00286 %	✓	
	023-001-00-8	215-239-8	1314-62-1									
10	zinc { zinc oxide }				45	mg/kg	1.245	49.851	mg/kg	0.00499 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
12	pH		PH		10.9	pH		10.9	pH	10.9 pH		
13	naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
14	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	• acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	• fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	• phenanthrene	201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
18	• anthracene	204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
19	• fluoranthene	205-912-4	206-44-0		0.75 mg/kg		0.668 mg/kg	0.0000668 %	✓	
20	• pyrene	204-927-3	129-00-0		0.69 mg/kg		0.614 mg/kg	0.0000614 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
22	chrysene	601-048-00-0	205-923-4	218-01-9	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	• indeno[123-cd]pyrene	205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	• benzo[ghi]perylene	205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
Total:								0.0175 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: W1-26/07/2022-0.0

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
W1-26/07/2022-0.0	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.0-0.5 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
10%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 10% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				2.3	mg/kg	1.32	2.733	mg/kg	0.000273 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium oxide }				0.11	mg/kg	1.142	0.113	mg/kg	0.0000113 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				11	mg/kg	1.462	14.469	mg/kg	0.00145 %	✓	
		215-160-9	1308-38-9									
4	copper { dicopper oxide; copper (I) oxide }				7.6	mg/kg	1.126	7.701	mg/kg	0.00077 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
5	mercury { mercury dichloride }				<0.05	mg/kg	1.353	<0.0677	mg/kg	<0.00000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
6	nickel { nickel(II) oxide (nickel monoxide) }				4.9	mg/kg	1.273	5.612	mg/kg	0.000561 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	38	mg/kg		34.2	mg/kg	0.00342 %	✓	
	082-001-00-6											
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<0.25	mg/kg	1.405	<0.351	mg/kg	<0.0000351 %		<LOD
	034-002-00-8											
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				7.1	mg/kg	1.785	11.407	mg/kg	0.00114 %	✓	
	023-001-00-8	215-239-8	1314-62-1									
10	zinc { zinc oxide }				47	mg/kg	1.245	52.651	mg/kg	0.00527 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
12	pH		PH		8.8	pH		8.8	pH	8.8 pH		
13	naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
14	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	• acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	• fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	• phenanthrene	201-581-5	85-01-8		2.1 mg/kg		1.89 mg/kg	0.000189 %	✓	
18	• anthracene	204-371-1	120-12-7		0.38 mg/kg		0.342 mg/kg	0.0000342 %	✓	
19	• fluoranthene	205-912-4	206-44-0		3.2 mg/kg		2.88 mg/kg	0.000288 %	✓	
20	• pyrene	204-927-3	129-00-0		3.3 mg/kg		2.97 mg/kg	0.000297 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	1.5 mg/kg		1.35 mg/kg	0.000135 %	✓	
22	chrysene	601-048-00-0	205-923-4	218-01-9	1.7 mg/kg		1.53 mg/kg	0.000153 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	2.2 mg/kg		1.98 mg/kg	0.000198 %	✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.83 mg/kg		0.747 mg/kg	0.0000747 %	✓	
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	1.9 mg/kg		1.71 mg/kg	0.000171 %	✓	
26	• indeno[123-cd]pyrene	205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	• benzo[ghi]perylene	205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
Total:								0.0146 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: W5-26/07/2022-0.0

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
W5-26/07/2022-0.0	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.0-0.4 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
14%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 14% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic trioxide }				3.5 mg/kg	1.32	3.974 mg/kg	0.000397 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
2	cadmium { cadmium oxide }				0.13 mg/kg	1.142	0.128 mg/kg	0.0000128 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				11 mg/kg	1.462	13.826 mg/kg	0.00138 %	✓	
		215-160-9	1308-38-9							
4	copper { dicopper oxide; copper (I) oxide }				14 mg/kg	1.126	13.556 mg/kg	0.00136 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
5	mercury { mercury dichloride }				0.05 mg/kg	1.353	0.0582 mg/kg	0.00000582 %	✓	
	080-010-00-X	231-299-8	7487-94-7							
6	nickel { nickel(II) oxide (nickel monoxide) }				7.5 mg/kg	1.273	8.208 mg/kg	0.000821 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	110 mg/kg		94.6 mg/kg	0.00946 %	✓	
	082-001-00-6									
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<0.25 mg/kg	1.405	<0.351 mg/kg	<0.0000351 %		<LOD
	034-002-00-8									
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				9.3 mg/kg	1.785	14.278 mg/kg	0.00143 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
10	zinc { zinc oxide }				140 mg/kg	1.245	149.864 mg/kg	0.015 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
12	pH		PH		8.8 pH		8.8 pH	8.8 pH		
13	naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
14	acenaphthylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
15	acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
16	fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
17	phenanthrene	201-581-5	85-01-8		4 mg/kg		3.44 mg/kg	0.000344 %		✓	
18	anthracene	204-371-1	120-12-7		0.75 mg/kg		0.645 mg/kg	0.0000645 %		✓	
19	fluoranthene	205-912-4	206-44-0		5 mg/kg		4.3 mg/kg	0.00043 %		✓	
20	pyrene	204-927-3	129-00-0		4.7 mg/kg		4.042 mg/kg	0.000404 %		✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6		2 mg/kg		1.72 mg/kg	0.000172 %		✓	
22	chrysene	601-048-00-0	205-923-4		2.1 mg/kg		1.806 mg/kg	0.000181 %		✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		2.8 mg/kg		2.408 mg/kg	0.000241 %		✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		1 mg/kg		0.86 mg/kg	0.000086 %		✓	
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		2.7 mg/kg		2.322 mg/kg	0.000232 %		✓	
26	indeno[123-cd]pyrene	205-893-2	193-39-5		1.4 mg/kg		1.204 mg/kg	0.00012 %		✓	
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.36 mg/kg		0.31 mg/kg	0.000031 %		✓	
28	benzo[ghi]perylene	205-883-8	191-24-2		1.6 mg/kg		1.376 mg/kg	0.000138 %		✓	
Total:									0.0325 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non GB MCL determinands

• chromium(III) oxide (worst case) (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database

Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• lead compounds with the exception of those specified elsewhere in this Annex

GB MCL index number: 082-001-00-6

Description/Comments: Least-worst case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following MCL protocols, considers many simple lead compounds to be Carcinogenic category 2

Additional Hazard Statement(s): Carc. 2; H351

Reason for additional Hazards Statement(s):

20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

• pH (CAS Number: PH)

Description/Comments: Appendix C4

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

• acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

• acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

• fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

• anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2; H351

■ **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

■ **ethylbenzene** (EC Number: 202-849-4, CAS Number: 100-41-4)

GB MCL index number: 601-023-00-4
Description/Comments:
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

■ **salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex**

GB MCL index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
20 Nov 2021 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

■ **monohydric phenols** (CAS Number: P1186)

Description/Comments: Combined hazards statements from harmonised entries in CLP for phenol, cresols and xlenols (604-001-00-2, 604-004-00-9, 604-006-00-X)
Data source: CLP combined data
Data source date: 26 Mar 2019
Hazard Statements: Muta. 2; H341 , Acute Tox. 3; H331 , Acute Tox. 3; H311 , Acute Tox. 3; H301 , STOT RE 2; H373 , Skin Corr. 1B; H314 , Skin Corr. 1B; H314 >= 3 % , Skin Irrit. 2; H315 1 £ conc. < 3 % , Eye Irrit. 2; H319 1 £ conc. < 3 % , Aquatic Chronic 2; H411

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides.

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected.

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight

nickel {nickel(II) oxide (nickel monoxide)}

Worst case compound based on absence of CrVI and assumed metal oxides from a combustion, ash based source.

lead {lead compounds with the exception of those specified elsewhere in this Annex}

Worst case compound based on absence of CrVI and assumed metal oxides from a combustion, ash based source.

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil.

vanadium {divanadium pentaoxide; vanadium pentoxide}

Most conservative species.

zinc {zinc oxide}

Worst case compound based on absence of CrVI and assumed metal oxides from a combustion, ash based source.

chromium in chromium(VI) compounds {chromium(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments

boron {diboron trioxide; boric oxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass.

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide]

Appendix C: Version

HazWasteOnline Classification Engine: **WM3 1st Edition v1.2.GB - Oct 2021**

HazWasteOnline Classification Engine Version: 2022.231.5299.9912 (19 Aug 2022)

HazWasteOnline Database: 2022.231.5299.9912 (20 Aug 2022)

This classification utilises the following guidance and legislation:

WM3 v1.2.GB - Waste Classification - 1st Edition v1.2.GB - Oct 2021

CLP Regulation - Regulation 1272/2008/EC of 16 December 2008

1st ATP - Regulation 790/2009/EC of 10 August 2009

2nd ATP - Regulation 286/2011/EC of 10 March 2011

3rd ATP - Regulation 618/2012/EU of 10 July 2012

4th ATP - Regulation 487/2013/EU of 8 May 2013

Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013

5th ATP - Regulation 944/2013/EU of 2 October 2013

6th ATP - Regulation 605/2014/EU of 5 June 2014

WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014

Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014

7th ATP - Regulation 2015/1221/EU of 24 July 2015

8th ATP - Regulation (EU) 2016/918 of 19 May 2016

9th ATP - Regulation (EU) 2016/1179 of 19 July 2016

10th ATP - Regulation (EU) 2017/776 of 4 May 2017

HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017

13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

14th ATP - Regulation (EU) 2020/217 of 4 October 2019

15th ATP - Regulation (EU) 2020/1182 of 19 May 2020

The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)

Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020

The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK:

2020 No. 1540 of 16th December 2020

GB MCL List - version 1.1 of 09 June 2021

Based across the UK with offices in
Manchester, Liverpool, Swindon and Glasgow.

Manchester (Head Office)

Unit 29
Eton Business Park
Eton Hill Rd, Radcliffe
M26 2ZS

t: 0161 763 7200
e: info@thelkgroup.com

Swindon

39 Bowman House Business Centre
Bowman Court
Whitehill Lane
Royal Wootton Bassett
Swindon
SN4 7DB

t : 01793 987 390
e : info@thelkgroup.com

Glasgow

Wright Business Centre
1 Lonmay Road
Glasgow
G33 4EL

t: 0141 773 6269
e: info@thelkgroup.com

Liverpool

Unit 10
12 Jordan Street
Baltic Triangle
Liverpool
L1 0BP

t: 0161 763 7200
e: info@thelkgroup.com



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